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TECHNICAL INSTRUCTION FOR IRELAND,
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DEPARTMENT OF ~~AGRICULTURE~~
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TECHNICAL INSTRUCTION FOR IRELAND.

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JOURNAL.

Agricultural Education—Marketing Wild Fruits—The Department's Fishery Cruiser "Helga"—Farmyard Manure—Jubilee of Union of German Agricultural Co-operative Societies—Cultivation of Flax in Holland and Belgium—Forestry in Denmark—Technical Instruction in Newry—Barley Growing in Ireland—Influence of Colour of Seed of Black Oats—Beans as a Field Crop in Ireland—State of Cereal Crops at Mid-October, 1908—Fruit Crop, October, 1908—Sprouting Seed Potatoes—Egg Records—Official Documents—Notes and Memoranda—Statistical Tables.

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NOTICE.

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AGRICULTURAL EDUCATION WITH SPECIAL REFERENCE TO IRELAND.

BY

J. R. CAMPBELL.

*[An Address delivered before the British Association at Dublin,
September, 1908.]*

The subject of this address has been so much discussed that I feel almost as if an apology were needed for venturing to bring it under your notice.

For the past eight years the Department of Agriculture here have been engaged in working out a system of agricultural education suited to the needs of the country. We have sought to keep our movement on sound lines, and to avoid mistakes into which other countries, with an earlier experience, fell. Up to the present we may congratulate ourselves that progress, if slow, has been real and safe, and that it is not merely positive accomplishments, but dangers avoided, that should be placed to our credit. We have laid the foundations securely. The superstructure is beginning to take form, and we are quite anxious that the original design should not now be seriously altered. You will realise, therefore, that it is not for the mere purpose of inviting an academic discussion that I raise the question. I desire to avail myself of this opportunity of eliciting the views of others who are qualified by experience to formulate opinions on the subject.

WANT OF HARMONY IN METHODS.

Were a more general apology required I might find it in the fact that, notwithstanding all that has been said and done, one has to make but a brief inquiry into the manner in which provision is being made for agricultural education to realise how far we yet are from harmony in methods or ideas—even among those of us actively engaged in directing the work. The very systems of administering state aid in different countries present such striking differences as to indicate the absence of a settled common opinion or policy. As but one example of this—we find in Scotland that the money voted for agricultural education is placed in the hands of the authorities responsible for general education; while in England it is mainly, though not wholly, in

the hands of the Board of Agriculture. Further, when one proceeds to examine into the details of the systems adopted in several European countries, there is found the greatest diversity of procedure—plain proof of the fact that the authorities are not as yet agreed on the fundamental educational or administrative principles that should guide their actions. Yet they all have but one simple well defined object, and in the countries referred to the function and status of the farmer and of farming in the national life are practically the same. Whence, then, this diversity? The question requires further study, and it is surely a fitting subject for consideration in the Agricultural Section of this Association.

Some explanation of the lack of harmony referred to may be found in the fact that state aid to agricultural education is of comparatively recent origin. In Great Britain the present activity began with the passing of the Local Taxation Act of 1890. Thereupon farmers who understood little of educational methods and educationalists who knew little of farming, proceeded to formulate schemes of agricultural education—each county or group of counties in its own way. There never was more need than at that moment for the controlling influence of a central power to direct and co-ordinate the schemes of local authorities and other bodies that engaged in the work. Had a portion of the Beer and Spirit Duty been earmarked for agricultural development and placed at the disposal of the Board of Agriculture for conditional allocation among county councils, as was done in Ireland ten years later, agricultural education would be far better organized in Great Britain to-day.

AGRICULTURE NOT A SCIENCE.

To my mind so much stress was laid at that time on the importance of scientific instruction that the country was led to expect too much from it, and agriculture began to be talked of as if it were a science, and technical training as if it were the beginning and end of the farmer's education; whereas really a commercial and a practical training are each more essential to success than technical instruction. All three, of course, are necessary if he is to occupy a foremost place, for farming does not admit of paid specialists in each department. The division of labour that counts for so much in urban industries is here impracticable. The farmer must not only understand generally but must himself direct every detail of his varied business. The simple regularity of the machine shop and the factory is unknown and impossible on the

farm. I am well aware that it is the fashion for those engaged in manufacture and commerce to lecture the farmer on what they are pleased to call his slavish adherence to rule of thumb. It is, however, only in the machine shop, at the desk, and possibly in Government offices, that rule of thumb and precedent prevail. On the farm, with its long cycles, its operations largely concerned with the care and development of complex living organisms, and its dependence on ever-changing meteorological conditions, no rule of thumb is possible—not at any rate to him who lives and thrives by his calling.

Agriculture is not a science. It is a complex and difficult business, and can only be learned as businesses are learned—by a long and early apprenticeship. It is only, therefore, on a well managed farm, carried on under normal farming conditions, that it can, as a business, be properly learned. No amount of technical or scientific education can compensate for the lack of knowledge and experience which such a farm alone can give. In Scandinavian countries so well is this understood that it is the practice for a youth, after serving his apprenticeship at home, to go as journeyman to a leading farmer to strengthen and broaden his education. Again, take the case of our own most successful farmers: how were they trained? They received a good general education in which neither farming nor elementary science had any part. They imbibed their knowledge of farm practice from their earliest years by watching and helping skilled craftsmen in field and farmyard. The best of them doubtless were fortunate in that their early boyish interest was fostered by sympathetic workmen, among whom may be found some of nature's best teachers of agriculture. Their mastery of the business is good evidence that a scientific education is not an essential precedent to success. Though they never understand the principles of any science their general education enabled them after they had entered on the serious business of life to take an interest in changes in practice resulting from new applications of science; while their quickened intelligence soon led them to experiment, and, when profitable, to incorporate the improvements in their practice.

I emphasise these facts because we meet in Ireland, as elsewhere, the idea that the salvation of backward farming lies in the teaching of agriculture in the primary school, and in the multiplication of agricultural colleges with demonstration farms attached.

SCIENCE AS AN AID TO AGRICULTURE.

What part then, it may be asked, does science play in agriculture? Of course it plays a great part. Do not misunderstand me. Nothing is farther from my intention than to minimise the benefits which science has conferred on agriculture. To it are mainly due the great improvements that have taken place in the last century. These improvements, however, were not brought about by direct scientific instruction of the farming masses. Then, as now, there were thousands of farmers who knew nothing of science, and who had received no technical education, yet whose methods were profoundly modified by the teaching of science. How were the results of scientific research woven into the practice of such men, and this, too, without their knowledge? A system so old which has achieved so much is well worthy of close imitation. Under it we find that long before the days of technical education agricultural problems exercised the minds of the great men of science, but their researches were only followed and appreciated by the well-educated few—members of agricultural societies, who were representative men in their districts. It was through these pioneers that the teaching of science filtered down to the rank and file of the farming community. The same influence is at work to-day, and our schemes are imperfect if not framed to take full advantage of it.

Farmers, as a class, are reputed to be most conservative. They are, undoubtedly, very suspicious of new ideas. They are quick, however, to appreciate the merit of success. It is quite a mistake to suppose that they will only do as their fathers did before them. The average farmer in this as in other countries follows the example of the successful men of his district. These are the men, therefore, natural leaders, whom we should seek to influence. Fortunately the more successful and better educated they are the more they appreciate education. The best the State can do, therefore, after having made full provision for research and for a technical training of the class who can best take advantage of it, is to facilitate the infiltration of a knowledge of the results of scientific research into the farming masses. But if we are to succeed in this aim every farmer should have a good general education and facilities for learning the latest applications of science to his practice. These facilities can be provided in various ways. Much may be accomplished by developing the work of agricultural

societies and of farmers' clubs, and by the free use of good agricultural literature. But the agency which in every country has been found to best facilitate the spread of agricultural knowledge has been a corps of itinerant instructors—men well trained in practice and in science, who are in the closest touch with agricultural research and able to explain results to students in the class-room as well as to demonstrate them in the field to the average farmer. To these I would emphatically add that other agency, the leading farmers who are constantly if silently instructing by example—a body whom we should seek to augment and to train technically.

THE AGRICULTURAL WORK AND POLICY OF THE DEPARTMENT.

With these considerations before us, I now proceed to describe briefly the policy and work of the Department of Agriculture here so far as it relates to this particular duty. The Department was created in 1900, just ten years after the Technical Education movement may be said to have begun in Great Britain. The annual income placed at its disposal for agricultural and subsidiary industries is a little over £100,000, of which £78,000 corresponds to the monies given in Great Britain to County Councils under the Local Taxation Act. Ireland, therefore, instead of being liberally treated, as our friends in Great Britain imagine, has probably less to spend on agricultural education than one or two of the wealthiest counties in England. But though our funds, when spread over the thirty-three counties, are much smaller, we have made better use of them and made them go further, and this largely because the money is in the hands of the central authority, who are thus able to see that it is all spent on educational projects. Moreover, each County Council raises a special rate to augment what the Department gives, a practice not followed in Great Britain, and which, therefore, should be borne in mind when a comparison is made of the amounts of public money spent on agriculture in the two countries. To ensure co-ordination and to prevent overlapping and waste, all proposals and all expenditure of the Agricultural Committees of County Councils must receive the sanction of the Department, one of whose officers attends the meetings of these Committees to assist them in drafting their schemes.

Bearing in mind that over a large part of the country agriculture was in a backward condition, and that the only agricultural

education possible to most of our young men was such as was to be had on their fathers' farms, it was at the outset decided to raise the general condition of farming by applying a substantial part of the Department's endowment and of the local rate to schemes for the direct improvement of live stock, tillage, horticulture, poultry keeping, dairying, creamery management, etc. Briefly, this was effected by subsidising high-class sires (of which there are at present about 1,700), by a system of prizes for all forms of agriculture; by experiments of a commercial rather than of a scientific character; by scientific investigations, for which special laboratories were equipped on the spot, the work being entrusted to the best specialists, native or foreign, that could be found; and finally by the organisation of farmers and of the marketing of our produce in Great Britain. All this work is still in progress. The present is hardly an occasion for describing it in detail, and it will suffice if I give but one illustration of the effect. Take the poultry industry, which has been developed by itinerant instruction and by the subsidising of about 600 centres for the distribution of eggs of improved breeds. The consequent increase in the annual value of our export of eggs alone more than exceeds the whole annual expenditure of the Department on agriculture.

There are, doubtless, many educationalists who do not consider the money so spent as devoted to agricultural education. The Department, however, are of a different opinion since the work satisfies our definition of agricultural education, the object of which is to enable the farmer to obtain the maximum of the best produce by the minimum expenditure of time and money.

THE DEPARTMENT AND AGRICULTURAL EDUCATION.

But it is not on the direct improvement of agriculture that I wish to focus the interest of this meeting, but rather on the provision made for technical education in the accepted sense of the term. At the outset the Department was met by a demand for residential agricultural colleges and model farms. Much disappointment was caused by the announcement that it was not in this direction that they mainly looked for the improvement of agriculture. Their actual programme comprised the training of teachers and experts, the appointment of itinerant instructors in

every branch of agriculture, the establishing of winter schools and of agricultural stations for experimental and other work, and provision for research.

At the beginning it was laid down, and the principle has been steadily maintained, that no work, however pressing, was to be undertaken until thoroughly trained teachers were available. The first duty, therefore, was the training of workers, and, bearing in mind the cost of equipping collegiate centres, it was decided to establish one only for higher education in Ireland. Accordingly a Faculty of Agriculture was immediately added to the Royal College of Science in Dublin. There scholarships are provided for such men as have already learned the business of farming. They undergo a three years' course in science and its applications to agriculture to fit them as instructors and investigators. By concentrating on one institution under their direct control the Department have been able to give a first-class training of a university standard to a large number of men at far less expense than would have been possible under the system in vogue in Great Britain. This policy has been fully justified, for our one institution has been ample for all the needs of the country; and on the completion of the new college, in which full provision is being made for research, no further expenditure on higher technical centres will be needed. As in Great Britain, however, these higher longer courses have not attracted the young men who are to succeed their fathers on the farm. Like the degree courses in an English university they have attracted only the men who desire to train as teachers and specialists.

The Royal College, affording only instruction of university standard and duration, it appeared desirable to provide one institution for young men who wished for a more limited training in agriculture and horticulture. This provision has been made at the Albert Agricultural College, Glasnevin, a residential college with farm attached, the work of which is closely associated with the Royal College courses. In this case also, as was anticipated, one such institution has been found ample for the needs of the country.

As fast as men have been trained at these two institutions they have been appointed by County Committees to act as Itinerant Instructors in agriculture and cognate subjects. Their most valuable work has been the making of field demon-

strations and experiments. These were so designed by the Department as to admit of the results being readily collated and summarised. Instructors may carry on their own investigations, but all must attend to the official experiments. These have been in operation since 1901 and are to be found everywhere. Thus, we are able to place before the farmers in the most condensed form—almost as concise as a sixpenny telegram—the net results of experiments carried on for a long series of years with various crops, soils, and seasons. The effect of this on farming may be found in the most backward districts, for though the small holder is not directly reached by leaflet or lecture he reaps the benefit through his co-operative society that supplies him with seeds, manures, feeding-stuffs, and other requisites; for agricultural merchants and manufacturers here have been far readier than in Great Britain to bring themselves into line with the Department's propaganda.

There are, in Ireland, those who believe that the work of the Itinerant Instructor is merely temporary and that it should cease and be succeeded by activities of a different character. Our experience, however, and it is the experience of every other country, is that there is no more valuable system of spreading agricultural education than by the employment of such officers. The nature of their work may change somewhat as progress is made, but the more interest we arouse and the further technical education spreads the more valuable and necessary their services become. I would remind any who are desirous of seeing the system of itinerant instruction superseded that not one of our thirty-three counties would willingly part with the men working under it to-day, that numerous farmers apply to them systematically for information which requires a knowledge of technical agriculture, that they keep the Department supplied with information as to the state of agriculture in every quarter, check frauds in the sale of manures, seeds, and feeding-stuffs, adjudge prizes for good farming and gardening, while many discharge duties in connection with our live stock schemes. I am convinced that such officers will always be needed and that the occasional cry for some new system does not really come from those best able to estimate the value of their work.

Winter schools form the next item on the Department's programme. In 1902 they began with one such school, the number has annually increased, till this year provision is made for them

in twenty-seven counties and at sixty centres. A winter school is held at a convenient railway centre, one or more rooms being hired and suitably equipped for tutorial work. There qualified teachers give instruction in such matters as have a direct bearing on farm practice. The classes are not attended by boys who do not know what their future career may be, nor by the indifferent or thoughtless. From their very nature they attract only the serious youth who have already decided to devote themselves to agriculture, who know the practice and who have been stimulated by agricultural activity in the county to seek knowledge which they see to be proving profitable to successful men. The classes are not large, nor is it desirable that they should be so. In the Department's programme, as originally printed, it was anticipated that some of these schools would be established in connection with secondary schools, but experience has shown that better work can be done in rural districts and in buildings simply but suitably equipped for this special purpose.

The provision of experimental farms or agricultural stations, as we call them, so soon as men had been trained to staff them, was contemplated, and three such are now in existence; while money has been saved and reserved for the provision of others. To two of these stations a teaching side has also been added. In this respect they closely resemble some of the agricultural schools in England, Denmark, and France. The attempt is made to teach technical agriculture during a brief apprenticeship to farm practice; but experience everywhere proves this to be the most costly form of education. Moreover, the youth who might profit cannot be spared from his father's farm except in the winter months, and the truth is that he learns farm practice better at home; while he can get technical instruction more easily and economically and quite as efficiently at the winter courses. These agricultural schools are too often the resort of the novice who knows nothing of farm life, but whose parents—seeing no hope for him in any other calling—foolishly imagine that he can be made a farmer. To them also come youths who see in them a possible avenue to other employment than farming. That such schools do good and benefit a limited class there can be no doubt, but their cost is prohibitive in a poor country, and beyond those fulfilling the functions of agricultural stations an immediate large increase in their number is neither necessary nor desirable.

AGRICULTURAL EDUCATION FOR WOMEN.

One word as to the education of the women to whose lot it falls to participate in the work of the farm. The necessity for their education is as great as is that for the farmers and their sons. Though time does not permit of my entering into the subject it may be said that the Department lay great stress upon this side of their work. Corresponding with the provision which has been made for men, training schools for teachers of dairying, poultry-keeping, and farm house-keeping have been established and subsidiary schools have been opened in connection therewith, while numerous itinerant instructors bring to the doors of those who can take advantage of it such practical help as experience shows they need.

The Department thus have laid the basis of a graduated system of agricultural education by means of which the youth who is inspired by their schemes for the direct improvement of agriculture or by the teaching of the itinerant instructor may obtain an education in the local winter school, whence the ambitious may proceed to an agricultural station, thence to the Albert Agricultural College, and finally—if his knowledge of practical agriculture and his general education permit of his profiting by instruction of the university grade—to the Royal College of Science.

This then is the policy which we deliberately decided upon eight years ago. With much labour and anxious care it has been brought intact to its present stage of development; and judged either by its results or by a comparison with similar movements in other countries I find no reason to doubt its wisdom. On the contrary I should see nothing but danger in departing from it. In its main lines, too, it has been incidentally endorsed by the Departmental Committee which recently reported on Agricultural Education in England and Wales.

But time, so important a factor in education, is required before the full effect of this or any other system can be manifest. Much of the wasted energy and want of continuity in technical education has been due to an impatient demand for tangible results. In this respect agriculture has suffered along with other industries, and one must be excused therefore if one fails to contemplate without some anxiety the most recent demand for the reformation of primary education in rural schools by the inclusion in their curriculum of a form of instruction which some look to as an

instrument to readjust economic conditions by attracting people to the land as labourers or farmers, and even as a means of working a revolution in the practice of agriculture itself.

AGRICULTURE AND ELEMENTARY SCHOOLS.

It will be observed that our system extends neither to the elementary schools nor to the university, and it is in reference to the influence of these that I now wish to direct attention. First, as to agriculture in elementary schools. History, as I read it, is against the view that technical agriculture or horticulture requires any place in our elementary educational system. I have already referred to the great advance made in farming methods during the last century. Was it the outcome of an agricultural education in elementary schools? Most assuredly not. Parts of Scotland are often referred to as affording examples of the best agriculture in these islands. Pre-eminence there was indeed largely due to the elementary school, but it was to the sound general education given, and in no sense to the teaching of agriculture, of science, or even of what is now called nature study. In Scotland the school trained the man, and the farm the farmer. Denmark, too, is a much-quoted example of recent and rapid agricultural development; but you will find there no attempt and no desire to deflect the general work of the school from its primary object by an effort to prepare pupils for a special calling. Swimming and gymnastics indeed are included, but there is no notion of adding agriculture; and even from their People's High Schools, which deal with young men and young women of the farming classes, the teaching of agriculture is excluded.

But those who wish to see the teaching of agriculture introduced into the primary schools would do well to study the history of a movement of this kind which began in Ireland seventy years ago. The Commissioners of National Education started in 1838 by giving lectures on agriculture to men training as elementary teachers. At the outset they provided a farm in order that the training given might be more thorough. By so doing they sought to qualify elementary schoolmasters to give instruction in agricultural science. The number of agricultural schools gradually increased until in 1875 they amounted to 228, all of which had farms attached. School gardens, too, formed a feature of the work and, independently of agricultural schools proper, there were at one time more than 100 schools having gardens attached

for instruction in horticulture. Of the agricultural schools about 39 were residential, and here older boys worked on the farm besides receiving instruction in the classroom. These schools also served as training centres in agriculture for pupil teachers and headmasters living in the vicinity. Moreover, agriculture was made a compulsory subject in elementary schools. Of course, it may be said with truth, this system did not get a fair chance. Moreover, it included some of the forms of agricultural instruction which have stood the test of experience, such as that by itinerant instructors. The system had had, from the first, to fight against the opposition of *laissez faire* opinion in England and at the Treasury, till it was finally extinguished; so that when the Agriculture and Technical Instruction Act was passed in 1900 all that remained of it were two institutions, the Albert Agricultural College, Glasnevin, Dublin, and the Munster Institute, Cork, which were taken over from the Commissioners by the newly-created Department of Agriculture and Technical Instruction, the authority since charged with the duty of providing agricultural instruction. Nevertheless, this experience, such as it was, of fifty years' attempts at teaching agriculture in elementary schools has its value, if we will learn to profit thereby in the future.

If there be truth in my contention that wherever agriculture has been developed it has been through the influence of its leading practitioners, what advantage is likely to accrue from teaching agriculture to boys who neither understand the rudiments of farm work nor have decided as yet whether they are even to become farmers at all or not. Moreover, if my further contention be sound, that agriculture can only be taught by men who have had a systematic training both in science and practice, what likelihood is there that the schoolmaster, who has had no such training, and who may have no inclination for the work, will succeed? I am well aware that there may be a possibility of teaching agriculture in upper primary schools to such boys as are certain to succeed their fathers, and when the teacher is, by nature and training, specially qualified for the purpose. But these conditions are so rarely met with that no general system could be formed on them as a basis. I feel strongly on the subject because I apprehend that attempts may be made to divert our energies from work with great promise into a channel which experience and a fair study of the facts show it is not likely to lead to success. At the same time I am well aware that many educationalists who advocate a reform

in elementary education disclaim all idea of teaching boys technical agriculture or horticulture; their desire being rather to teach the study of nature, to develop the powers of observation, and to train the deductive faculty.

I have emphasised the complicated and difficult nature of farming and the need for a good elementary education for our young farmers, but we find in Ireland, and it is the same in other countries, that in winter classes pupils have not a sufficient grounding in English or arithmetic to enable them to take full advantage of technical courses, and we have actually to give a preliminary training in those subjects. Now in winter schools there is no time for such preliminary teaching, and I ask in all seriousness which is better—to give boys a course of nature study or agriculture, or to teach them sufficient English and arithmetic to enable them to profit by instruction, such as is given in technical schools for agriculture and other industries, and to transact ordinary business in after life efficiently? Whatever the value of nature study may be, and I certainly do not wish to underrate it, if it is the means of preventing us from raising the general education in rural schools to a sufficiently high level, I, for one, am prepared to sacrifice it entirely. But this ought not to be necessary. Nature study need not be a special subject, with a distinct place in the time-table. It ought rather to be an influence pervading the atmosphere of the school, so that every subject taught should find its illustrations in rural life.

Let me make my position quite clear. Next to a thorough and intelligent grounding in the essentials I would desire to see nature study find a place in every school. But what causes me apprehension is that so many who advocate nature study also demand a school garden as part of their apparatus. Now school gardens everywhere are much of the same pattern. You have a plot of land devoted to the cultivation of the various garden crops, fruit trees, vegetables and flowers. Why is it that nature study cannot be carried on without cultivating these? Is not every rural school so situated, with trees and flowers and vegetables and crops growing in all directions around it, that there are ample opportunities for finding abundance of material with which to train the observation and broaden the outlook? When it is recognised how difficult a subject nature knowledge is to teach well, what demands it makes on the ability, time and resourcefulness of the teacher, and how readily it degenerates into the much

easier mechanical process of cropping a garden, you will appreciate my anxiety. So easy indeed is the descent that not all the enthusiasm of the nature study propagandists could, I fear, arrest it.

The plain truth is that there are two questions involved in the nature knowledge propaganda. Some see clearly the advantages of simple nature study, and seek nothing further; while others—and these the majority—confuse nature study with technical agriculture and technical horticulture as taught through a school plot. Let us clear our minds on the subject. Nature study may, in skilful hands, become a most potent educational instrument, re-acting beneficially upon the teaching of every subject in the school courses, but vegetable gardens are surely not required for the purpose. School gardens, on the other hand, certainly have a legitimate function, though this is primarily economic. Nothing could be better as a means of teaching the art of gardening, and for this purpose they are invaluable in connection with continuation schools, but for the schoolboy they are not really necessary. My plea is for a clearer delimitation of the respective provinces of nature study, of the teaching of horticulture, and of the teaching of agriculture. Nature study is for any school child, and its field is nature's garden. Horticulture aims at training gardeners and enabling any who have left school to derive pleasure and profit from small plots of land, and its legitimate field is the school garden. Agriculture seeks to make boys farmers and can only be learned on the farm and at the technical school. Nature study is worthy of our highest commendation, but if it is expected to do anything more for the future farmer than for any other pupil, whatever his calling is to be, it then becomes merely a form of technical horticulture or technical agriculture, a fate from which the true friends of both education and agriculture would fain save it.

The recent Departmental Committee on Agricultural Education inquired incidentally into the question of the relative provinces of the Boards of Agriculture and Education in England. Agricultural education, being the education of a business, should be under the direction of the Board of Agriculture. If nature study is also to be considered a part of agricultural education it, too, should be supervised by the Board of Agriculture. Then there would be confusion, overlapping, administrative waste, loss of interest, and ultimate stagnation. Let us, however, once frankly admit that

nature knowledge has no necessary reference to the teaching of agriculture and all difficulties disappear. Nature study being valuable alike to all children, so long as it does not interfere with the much-needed improvement in the standard of general education of rural classes, its administration naturally and rightly belongs to the province of the authorities for primary education.

AGRICULTURE AND THE UNIVERSITIES.

There remains only the question of the relation of our universities to agriculture. I have pointed out that our Royal and Albert Colleges are ample for training in the technology of agriculture. There is, however, a class of the community whose position and influence in the nation demand that they should have clear and sound ideas on agriculture in its broadest aspects. For such, full provision should be made in our educational system. I refer to those destined for public life, members of the clerical, legal and other learned professions, journalists, administrators, teachers, and all those whose position demands for them a liberal education. Agriculture as now taught in most universities, both in Great Britain and elsewhere, being largely concerned with the details of an industry, belongs to the domain of technology and not to pure science or to the humanities. Those responsible for the establishment of agricultural faculties in our universities had a definite object before them, viz., the direct improvement of the business of agriculture, and it was inevitable that their courses of study should take the form they did. Even the professorships of Rural Economy in Edinburgh and Oxford Universities, which were founded long before the present demand for agricultural education arose, are probably more concerned with technology to-day than their founders intended them to be. But agriculture can also be treated as a branch of the wide subject of national economics. Its importance in the national life is such as to demand from all public men a knowledge of its history, development, laws, potentialities, and relation to our social and economic systems—a knowledge which too few public men possess. It would surely be a great gain to agriculture if a chair or lectureship of agriculture or rural economy, to deal with these broad aspects of the subject, were added to all our Universities, and the subject made compulsory for a degree in arts. Technical agriculture should form no part of such a course; it has its own specialised function to fulfil, and its degrees belong to the domain of applied science, whereas agriculture—dealt with on the lines I have indicated—

finds its fitting place in the arts curriculum. In this country this knowledge is wanted as much as anywhere. Agriculture, taught as a profession, is already fully provided for by the Department of Agriculture and Technical Instruction, whose business it is to supply instruction of this nature to those engaged in the industry or intending to be agricultural leaders, teachers, or scientists. To the university belongs the function of shaping the general higher education of the class I have indicated and it is to be hoped that agriculture, in its humane aspect, will receive from the new colleges the attention it merits.

MARKETING WILD FRUITS.

No very reliable estimate can be formed as to the full value of the crop of blackberries in an average season in Ireland, but it may be of interest to note that in 1906 the estimated export from Ireland was 7,506 cwts., valued at £3,378; and as a considerable proportion of the fruit pulped and exported probably consisted of blackberries, it may be assumed that the total export in that year was little short of 10,000 cwts., or 500 tons, valued at approximately £4,500. It is believed that the export has risen considerably since 1906, and there can be no doubt that if more attention was paid to careful gathering and handling of this fruit and the marketing of it in packages as demanded by the trade in Great Britain, a much larger quantity might easily be exported and profitably sold.

Blackberries should be pulled when they have a "blue black" bloom; red unripe berries should on no account be gathered, nor should the fruit be left ungathered until it is of a "dead black" shade. Unripe fruit spoils the flavour of the remainder, and does not ripen with storage. Over-ripe fruit will not bear transit by cart or train without considerable deterioration, and is generally mashed and often mouldy on delivery.

When a district where the fruit can be gathered is near a railway station possessing a quick service to English or Scottish markets, by which the blackberries can be delivered not later than 9 a.m. and within twenty-four hours from the time of gathering, they may be marketed in chip baskets of one gallon capacity.* It is advisable to use the cardboard covers made for these baskets; the cover not only protects the fruit from dirt and pilfering but serves for use as an address label; thin wood covers can be obtained at a slight extra cost; the covers should be fastened to the baskets by string; probably the most secure method of fastening them on is to lace them to the rim of the basket, but they are generally tied on. It is also advisable when packing soft fruits such as blackberries to place a piece of grease-proof paper in the

* These baskets may be obtained from Messrs. Thomas McKennie and Sons, Ltd., 212, Great Brunswick-street, Dublin; and from Messrs. G. Smith and Co., 24, Merchants'-quay, Dublin.

bottom of each basket, as it protects the fruit from damage, prevents waste, and adds to the appearance of the package. Suitable grease-proof paper can be purchased for about six shillings per ream; one ream will suffice for 3,840 baskets. The trading of the fruit in baskets is most likely to succeed in the early part of the season: fruit marketed in this form is usually consigned to salesmen. When fruit is to be forwarded in baskets, reliable pickers only should be employed, and the fruit should be left in the baskets as picked so that it may be damaged as little as possible by handling.

The great bulk of the blackberries exported are shipped in kegs or barrels: these should be of sizes suitable for holding one hundredweight, or half a hundredweight, of fruit: many Irish shippers have been accustomed to use much larger barrels, but the use of these large vessels is objectionable, as when so packed the fruit tends to ferment and consequently deteriorates very much in value. The smaller kegs are now almost universally demanded by British buyers. The kegs recommended for shipping purposes are usually re-made butter-kiels and are non-returnable; they should be made without a head and, when filled, covered with a piece of clean canvas which should be secured in position by driving the hoop over it. These kegs cost from 1s. to 1s. 3d. each, and their value is paid by some buyers in order to secure the fruit being sent in this form. The fruit to be sent away in kegs should be pulled on the day of despatch, if possible in dry weather and in the condition as described above for chip baskets. The kegs should be scalded out before being used.

It is most strongly urged that all pickers should observe the greatest cleanliness; their hands should be well washed before picking fruit: clean new picking baskets should be used, and if re-used they should be washed and dried each day after having been emptied of the day's pickings.

In some districts it is the practice for pickers of blackberries to pick the fruit into galvanized pails and, before selling the fruit to shippers, to add water to the contents of the pails with the object of increasing the weight of fruit to be paid for; this practice is not alone dishonest but seriously diminishes the value of the fruit, and shippers should decline to take fruit which has been so treated; it is suggested that shippers should oblige pickers to use baskets for collecting the fruit, thus providing one means of avoiding trickery of this sort. Shippers should bear in mind that it is only by acting with strict honesty that they

can hope to compete with foreign produce on the British market; if fruit is shipped in bad condition, dirty, or watered, it must result in lower prices next season, or possibly in a refusal to take the fruit at any price.

There are numbers of shippers of this and other wild fruits in various districts in Ireland, most of whom are open to take supplies if the fruit is collected and handled properly. Those who desire to begin collecting are advised to supply existing shippers, as an increase of the number of shippers of blackberries, especially when the fruit is shipped in kegs, will increase competition for orders and bring about a diminution in price. Names of shippers will be furnished by the Department on application. When there are no shippers in a district it is suggested that traders, creameries, and poultry societies who collect or receive other kinds of produce and forward to cross-channel markets daily, should act as agents for the receipt or collection and despatch of this and similar fruits.

Bilberries, also called "Whorts," "Hurts," "Fraughans,"

Bilberries.

grow in upland and, especially, in mountainous districts; they are usually to be found on hill sides above the line of cultivation. There is a very large demand for bilberries in England, especially in Lancashire and Yorkshire, where the demand usually exceeds the supply. The fruit, which is about the size of a small pea, grows on a low shrub and when ripe bears an exquisite bloom which the berries lose soon after picking, but which it is desirable that they should retain as long as possible, therefore the fruit should be carefully handled. The berries should be picked free from leaves when they are of a rich blue black colour, with the bloom above referred to at its best; this is usually in July and early in August. The fruit should be despatched to market in one gallon chip baskets, as recommended for blackberries.

It is believed that the export trade in bilberries might be very largely increased, and that this fruit might be collected and shipped from many districts in Ireland, especially in the south and west where it is to be found in quantity.

Wild crab apples vary considerably in size and appearance:

Crab Apples.

they are usually sold mixed as to size and variety under the name of "crabs." In favourable seasons very large quantities are obtainable in the south of Ireland. The principal demand for this fruit comes from manufacturers of jelly, who require the

fruit unripe. "Crabs" should be packed in four or five bushel sacks, but only packed to such an extent as to permit of the mouth of the sack being tied, so as to provide a handle grip. A custom prevails of filling the sacks to their utmost capacity and lacing their mouths; this is wrong, and should not be practised, as when sacks are thus completely filled and laced a hand-grip is not provided as is the case when the sack is tied at the mouth, hence laced sacks are thrown and pitched about in handling, and the contents are bruised and thus rendered less valuable for making jelly.

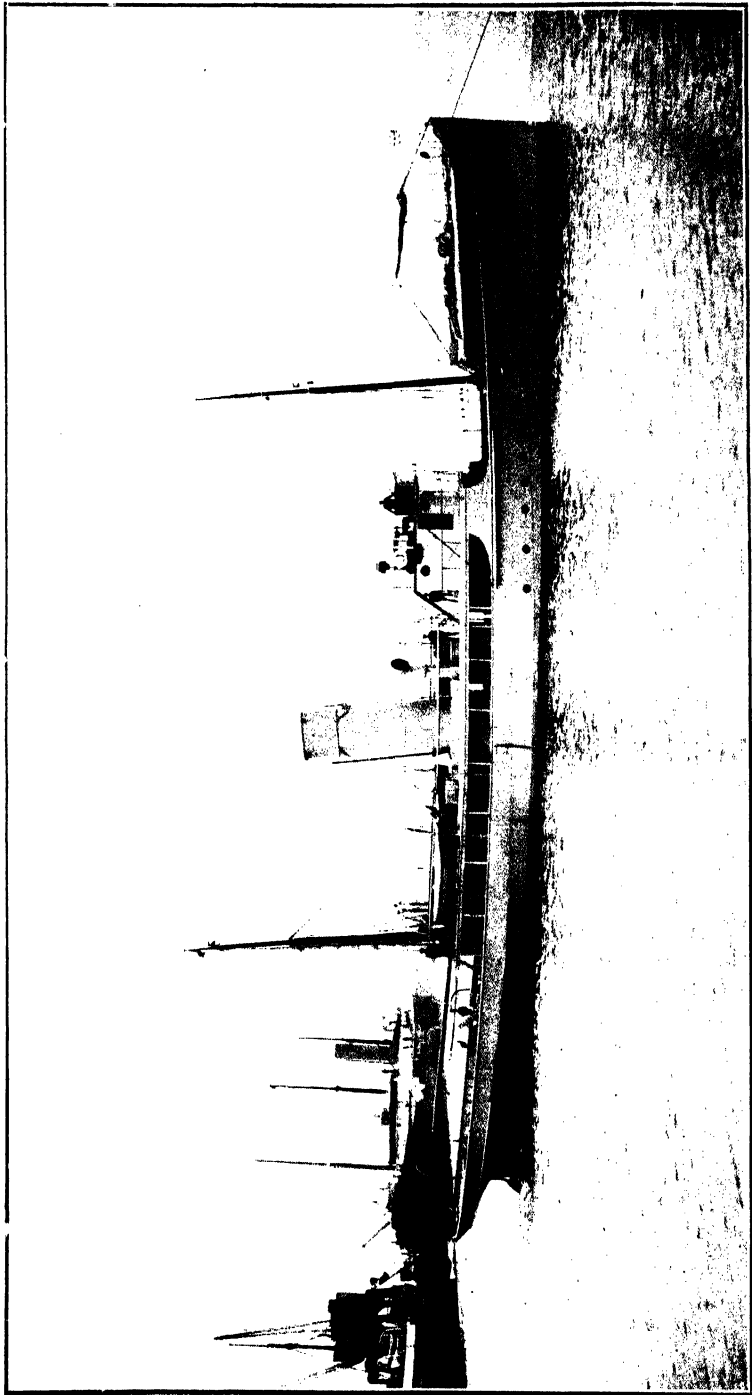
Many complaints have been received by the Department stating that sticks, stones, and dirt have been packed with crab apples shipped from Ireland. This practice should be discontinued.

It is recommended that sales of "crabs" should be made to the Irish shippers and Irish jam manufacturers, whose names will be supplied, if desired, by the Department to applicants.

The sloe, which is the fruit of the blackthorn, is obtainable in many parts of Ireland, more especially in the south. The Irish sloe is becoming more generally known in Great Britain, and its very high quality is being recognized; one large buyer has recently asked for a supply of one hundred tons in a single year. This fruit is ready for picking when it has a full rich bloom. On no account should unripe green sloes be picked.

The best package, both for pulling and transport, is a two-gallon chip basket. Sloes are not so perishable as blackberries and bilberries; they may, therefore, be forwarded by goods train, unless ordered otherwise by the buyer. Irish shippers are always prepared to buy sloes that have been properly handled, and a ready market for the fruit can be found in this country. The shipper will often supply baskets and accept delivery at the railway station nearest to the seller.

Copies of this article in leaflet form (No. 93) may be obtained free of charge, and post free, on application to the Secretary, Department of Agriculture and Technical Instruction for Ireland, Upper Merrion-street, Dublin. Letters of application so addressed need not be stamped.



The Department's Fishery Cruiser "HELGA."

THE DEPARTMENT'S FISHERY CRUISER, "HELGA."

In 1907 the Department received an advantageous offer to purchase their fishery cruiser, the s.s. "Helga," of which a description appeared in Vol. I., No. 2, of this *Journal*, and decided to take advantage of it in order to replace her by a vessel of greater speed and better adapted in various details to the work of fishery protection and research.

Plans and specifications were accordingly prepared by Mr. James Maxton, of Belfast, the Department's consulting naval architect, embodying, as far as possible, the many ideas suggested by eight years' experience of the work to be done; and the contract for building the new cruiser, after the consideration of several tenders, was given to the Dublin Dockyard Company, of the North Wall, Dublin.

The keel was laid on the 20th December, 1907, the hull completed and launched on the 16th May, when the ceremony of christening the vessel "Helga," after her predecessor, was performed by Mrs. T. W. Russell. A trial run took place on the Clyde on the 18th June, the speed attained exceeding that specified by nearly three-quarters of a knot, and the vessel was handed over to the Department on the 17th July, 168 working days from the signing of the contract.

The style in which she has been turned out reflects great credit on the builders, especially in view of the fact that the Department's resources necessitated very close consideration of the question of price.

The new s.s. "Helga" is 155 feet long between perpendiculars, and has a beam of 24·5 feet moulded, and a depth of 13·5 feet moulded amidships. Her gross tonnage is 322·89 tons and her nett registered tonnage 111·49 tons. Her mean draught, with full supplies of coal and water on board, is 11·5 feet. Both hull and machinery have been built under Lloyds' special survey to the requirements of their A1 Irish Channel Class, soundness of material and workmanship being thus assured, and the structural regulations of the Board of Trade, as well as those relating to navigating lights, life-saving appliances, etc., have been fully complied with. The certified freeboard

amidships is 2 feet 9½ inches, and the hull is divided, up to the main deck, into eleven water-tight compartments.

The main features of the vessel's general design are, briefly, as follows:—For purposes of speed her lines

General Design. under water are comparatively fine, in order to diminish the wave-forming resistance; at the same time, owing to her form above water, both forward and aft, she promised to be an exceedingly seaworthy craft, and has, in fact, shown excellent behaviour in bad weather, a point of vital importance to a vessel whose duties take her round the west coast of Ireland. Water ballast is carried in tanks forward, aft and amidships, a special tank being set apart for fresh water. A topgallant forecastle, with a considerable "flare," protects the well deck immediately abaft it. The front of the main deck house is formed by a bulkhead which extends completely across the ship, but has a door on the starboard side to allow a passage fore and aft. The stern is elliptical, with an ample sheer designed to give a spacious after deck, while keeping the freeboard amidships low, in order to facilitate boat work on police duty, as well as trawling and similar purposes. Above the bridge deck is a navigating bridge giving a clear view from stem to stern.

The two schooner-rigged pole masts are of pitch pine, the foremast stepped on the main deck, aft of the forecastle, and the mainmast on the after part of the bridge deck.

Bilge keels, seven inches deep and running fifty feet fore and aft, are fitted in order to minimize rolling.

The decks are for the most part steel, sheathed with wood, and insulated over the machinery and galley spaces with silicate cotton. The scupper-ways and the floors of the internal accommodation are finished with "litosilo," a material which can be worked to a smooth surface, not so hard or brittle as cement; the bilges and the inside of all tanks are treated with Portland cement.

On the topgallant forecastle deck is fitted the steam windlass, and accessory gear, for handling the bower

Details of Arrangement.

anchors, which are stockless, of Byers' patent pattern. A V-shaped breakwater, 12 to 18 inches high, is designed to prevent any water which comes on board here from running aft; and within the V is mounted a Hotchkiss three-pounder quick-firing gun (not shown in the photograph).

Under this deck, on the main deck, is the accommodation for the crew, with a separate lavatory, messroom and storeroom with individual lockers. Below this part of the main deck are the chain locker and the forward ballast tank, and aft of these, under the main deck, is a hold capable of carrying the ship's spare gear or a small quantity of cargo if required.

On the navigating bridge stands an electric searchlight, 16 inches in diameter, throwing a powerful beam, and forward of it are a chart table and steering wheel, and a Lord Kelvin's standard compass fitted with all the latest improvements. Immediately below, on the bridge deck, are the wheel-house and chart-room, with the usual flag lockers, etc.

Both oil and electric navigating lights are provided, and the latter are all controlled from a switchboard in the wheel-house. Mechanical telegraphs and speaking tubes provide communication with the engine-room and the captain's cabin.

The sides of the bridge deck are occupied by the boats, which comprise a lifeboat, dinghy and gig, and a 12-horse-power petrol motor launch built by Messrs. Hollwey & Son, of Dublin; in a position commanding the after part of the main deck is a special engine-room telegraph for use when trawling or similar operations are in progress.

On the port side, for a space of about 12 feet from the after end of the bridge deck, the stanchions supporting the latter are replaced by brackets fastened to the main deck house, in order to leave the rail below clear for trawling, and the rigging of the mainmast is arranged with the same end in view.

A coaling hatch opens on the bridge deck, in addition to the usual bunker openings on the main deck.

The forward end of the main deck house is occupied by a combined saloon and laboratory, lit by specially large windows, and furnished with abundant table and drawer space, a sink, stock bottles for preserving solutions, a work-bench for repairs to instruments, etc., and a swing table for use at sea. From this saloon on the port side a door opens directly on to the main deck, while on the starboard side one leads to the vestibule, giving access under cover to the cabins below.

There also open into the vestibule the captain's cabin, the bath-room, and a service door from the galley, and from it descends the stairway to the lower deck, where are situated the dining saloon, three cabins, each containing two berths, the steward's pantry,

the linen locker, and storage space for bottles containing biological specimens and for scientific instruments.

The central part of the main deck house is occupied by the engine and boiler casings. At its after end are placed, on the starboard side, a second galley for the use of the crew, a bathroom for the officers, and, on the port side, a small storeroom for various items of gear used in biological work, and a shelter in which the sorting of trawl contents and similar operations can be conducted in bad weather.

In the after end of the deck house, amidships, a short passage leads to the engine room entrance and to the officers' quarters on the lower deck.

The trawling winch, by Messrs. Robert Roger and Co., Ltd., is close abaft the deck house, and is designed to have a fair lead from either side of the ship. The trawl is worked from the port side. The system of a trawling port with rollers, found unsatisfactory in previous experience, has been replaced by a heavy davit carrying a specially designed universal swivel block, of which the sheave is 13 inches in diameter and 4 inches wide. When trawling or dredging the warp is led aft to a snatch-block on the vessel's quarter, so as to clear the port propeller. Two other davits are provided for boarding an otter trawl. On the starboard side is a deep-sea sounding machine, driven directly from the winch by chain and sprocket wheels. On this side also plankton nets, thermometers, and apparatus for collecting samples of sea water at various depths are worked from four light davits, and can be hauled by the winch through snatch-blocks. The winch can further be utilised to work a heavy derrick on the mainmast and to hoist the boats, a system of fair leads being arranged for the latter purpose on the bridge deck.

Further aft, a hatchway, the top of which can be fitted as a table, leads to a small hold containing spare fishing gear and the carpenter's and engineer's workshop; and on the deck aft of this hatchway can be fitted a "pound" into which the contents of the trawl or dredge are discharged when hoisted on board.

The propelling machinery, constructed by Messrs. David Rowan and Co., of Glasgow, is installed
Engines and Boiler. near the centre of the vessel's length.

Steam is supplied by a single cylindrical multitubular steel boiler working at a pressure of 185 lbs. per square inch, with Howden's system of forced draught. Under

this system the air is forced by a revolving fan directly into the three furnaces at a pressure equal to about one inch of water, and the stokehold is open and freely ventilated. In practice, however, it is found that a satisfactory cruising speed can be attained with natural draught.

The propellers, of bronze, are seven feet in diameter, and are driven by twin triple-expansion engines, having cylinders $12\frac{1}{2}$, 20, and 32 inches in diameter, with a stroke of 22 inches. 1,000 indicated horse-power is developed at about 168 revolutions per minute.

The valve gear is actuated by steam starting and reversing engines, and the levers of the latter, as well as other fittings, are so arranged that the engineer on watch can, without moving from his post, control both engines, attend to the speaking tubes and telegraphs, and watch the steam and other gauges.

A system of water cooling is provided for the thrust block and main guides and bearings.

The propeller shafts are protected from contact with floating objects by the embossment of the hull plating over their exposed length.

In addition to the direct-driven air, feed and bilge pumps, independent circulating and other pumps are driven by auxiliary engines; and at the after end of the engine room are an engine and dynamo capable of generating electricity for lighting purposes at a pressure of 110 volts for 100 lights in addition to the search-light. The electric installation throughout is by Messrs. J. H. Holmes and Co.

The principal work of the Department's fishery cruiser consists in policing the areas round the Irish coast which are affected by by-laws made by the Fishery Authority under several Acts of Parliament, in duties connected with the administration of fishery loans, and in carrying out inspections.

Duties of the "Helga."

The seaward boundaries of the areas at present wholly or partially closed against steam or other trawling, either in the interests of particular kinds of fishing or as nurseries for the protection of food fishes during immaturity, total between five and six hundred miles; but, as these areas are scattered round the coast, the "Helga's" actual "beat" covers some twelve hundred miles.

The Commander of the vessel is charged with the detection and identification of offenders at sea, and the preparation of evidence for their prosecution before magistrates. He is also empowered to seize the gear of steam trawlers found illegally fishing.

In addition to her other duties, the cruiser is periodically engaged in biological and other investigations connected with fisheries. A part of these is co-ordinated with the international scheme of fishery investigations.

Special surveys have also been carried out, or are at present in progress, of oyster beds and trawling grounds on the east, south, and west coasts of Ireland.

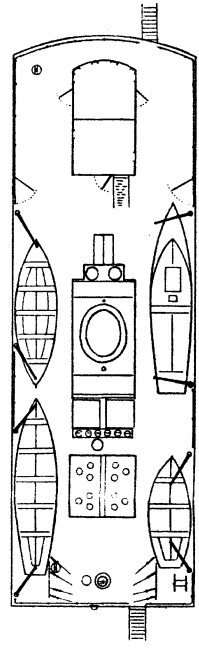
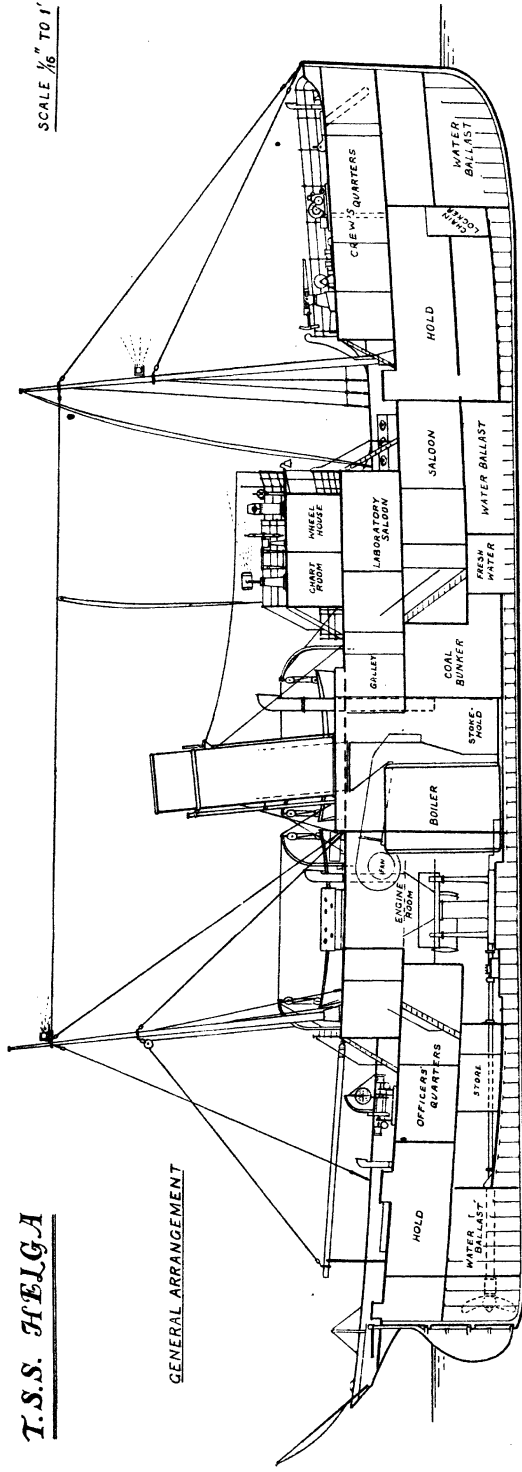
The results of the "Helga's" investigations are published in the Appendix to *Part II.* of the Annual Report on the Sea and Inland Fisheries of Ireland.

CHARLES GREEN.

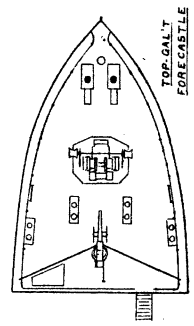
T.S.S. HELGA

SCALE $\frac{1}{16}$ " TO 1'

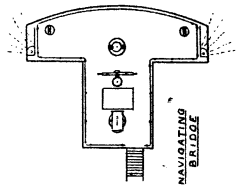
GENERAL ARRANGEMENT



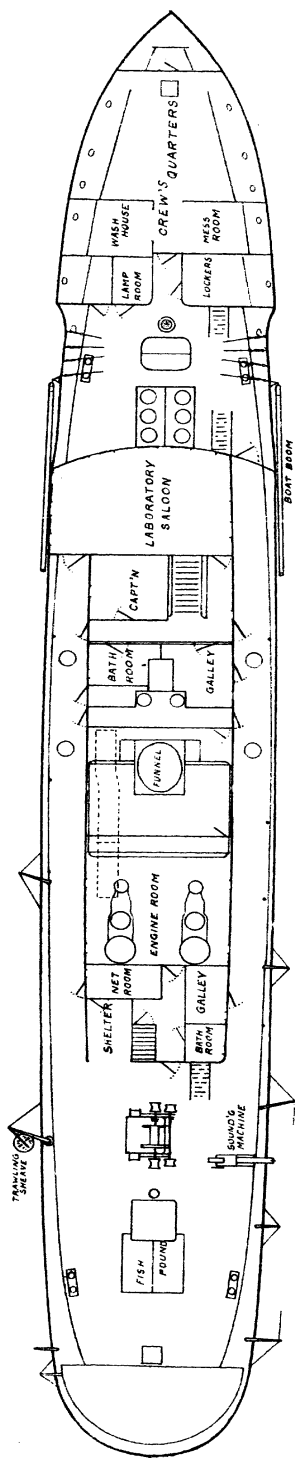
BRIDGE DECK



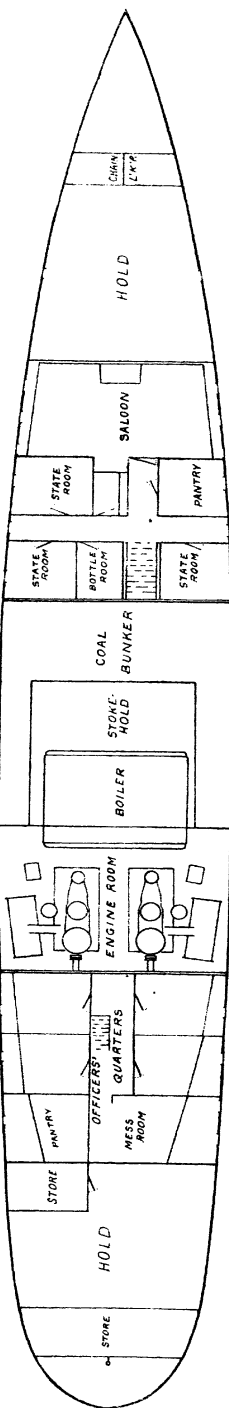
TOP-GALL FORECASTLE



NAVIGATING BRIDGE



MAIN DECK



LOWER DECK

T.S.S. HELGA

SCALE 1/16" TO 1'

FARMYARD MANURE.

For several reasons, farmyard manure is, and must continue to be, the principal fertiliser at the farmer's disposal. (1) It is produced in greater or less quantity on every holding. (2) By its use the manurial ingredients removed by crops consumed on the farm may be returned directly to the land. (3) It forms the basis of most systems of manuring. (4) It is suitable for application to practically every crop. (5) It has a most important influence on the physical condition of the soil.

The foregoing is sufficient to show that the management and use of dung is a subject worthy of the closest attention. Many farmers do appreciate fully the value of the manure and spare no pains to utilise it to the best advantage. A large section of agriculturists, however, have always neglected dung, and unfortunately there is ample evidence that the neglect is very wide-spread throughout the country at the present time. This waste of the fertilising ingredients of dung represents an immense monetary loss, as it necessitates the purchase of much larger quantities of artificial manures than would be required to maintain soil fertility were the supply of farmyard manure carefully conserved. The rapid increase during recent years in the use of artificial manures, and the comparative ease with which such can be applied have doubtless contributed to the neglect of dung. This is not as it should be, for although the judicious use of artificial manures is in every way commendable, they should be regarded as a supplement rather than a substitute for dung. Most of the waste, however, must be attributed to the fact that the conditions which influence the value of the manure are often imperfectly understood by farmers. Accordingly, the Department desire to draw attention to the essentials for the production of good dung and to the most approved methods of usage.

Dung is a complete manure, that is, it contains all the elements of plant food likely to be deficient in a soil,

Composition of Dung. namely, nitrogen, phosphates and potash.

Although the quantities of these substances found in farmyard manure are small as compared with the amounts contained in artificial manures, this deficiency is in a large measure made good by the heavy dressings of dung it is customary to apply. Dung differs from artificial manures in several respects: (1) the nitrogen, phosphates and potash in it are present as much more complex compounds than they are in artificials, consequently the

effect of a dressing of dung is spread over a longer period. (2) Farmyard manure has a beneficial influence on the physical condition of the soil. This effect, not obtained by the application of artificial manures, has an important bearing on soil fertility. Dressings of "long" dung render heavy retentive soils more friable and pervious to air and water, drainage is facilitated, and the land made easier to work. On light land, the application of well-rotted dung increases the retentive power of the soil for moisture and plant food. It is an important point in favour of dung that by its use the fertility of a soil can be maintained without the disadvantage of diminishing the stock of vegetable matter, such as occurs when artificials are used exclusively.

The liquid portion of farmyard manure is more valuable than the solid, since it contains a greater proportion of

Liquid and Solid Manures Compared. nitrogen and potash, and furthermore the ingredients in it are in a more readily available and quicker acting form. Manure from which the liquid has been allowed to escape is much reduced in value, as most of the nitrogen and potash has been lost.

CONDITIONS AFFECTING THE QUALITY OF FARMYARD MANURE.

Farmyard manure varies considerably in quality owing to the widely differing circumstances under which it is produced. The chief conditions which affect its quality are worthy of consideration and will be briefly discussed.

The greater portion of the manurial ingredients contained in foods are voided in the liquid and solid excrement.

Kind of Food Used. The average proportion of the total of each of the manurial ingredients consumed in food which pass into the manure are estimated as: nitrogen about 75 per cent.; phosphates and potash about 90 per cent. respectively. Since the greater part of the manurial constituents of dung are derived from food, it is evident that the quality of the feeding stuffs used very largely influences the quality of the manure. Foods such as cotton cake, linseed cake, &c., rich in fertilising ingredients, produce good dung.

Young animals making rapid growth and cows in milk extract greater quantities of the valuable ingredients

Kind and Age of Animal. from food than do fattening animals or working horses, and consequently the manure derived from young animals and cows in milk is poorer in quality than that voided by fattening cattle or working horses. It is estimated that a cow in full milk will extract from food four or five

times as much nitrogen, three or four times the amount of phosphates, and about ten times as much potash as a fattening bullock fed on a similar ration.

Litter influences the character of farmyard manure in several respects. In the first place the physical effects

Litter. of dung, to which reference has already been made, depend mainly on the kind and amount

of litter mixed through the manure and its state of decomposition at the time of application. Bulky litter which is but slightly rotted has the greatest physical effect on stiff soils, whilst the reverse holds good in the case of light soils. The materials used as litter, of which straw and peat moss are in most general use, contribute in a small degree only to the chemical composition of the manure, and if used much in excess of the quantity required for absorbing the liquid the resulting product will be more bulky but less concentrated than where the amount of litter is restricted.

Even under the most favourable conditions an appreciable loss of nitrogen occurs during the storing of dung,

Fresh and Rotted Manure. but, provided the manure has been so treated as to reduce waste to a minimum, the smaller

bulk of rotted manure will contain most of the nitrogen and practically the whole of the other manurial ingredients originally present in the fresh material; furthermore, the ingredients in manure rotted under such conditions will be more readily available as plant food.

The method of storing farmyard manure has great influence on the final quality of the dung. No matter how

Storage. rich the solid and liquid excrement may be in the first instance, a large proportion of the

valuable ingredients of the manure are liable to be lost by subsequent bad management. Whatever may be the conditions under which dung is made and stored, care should be taken to prevent:

(i) Loss of the liquid by drainage, for the reasons already indicated.

(ii.) Over heating, which drives off much of the nitrogen from the manure.

The following precautions for preventing loss from farmyard manure in either of the two ways mentioned are applicable to all conditions under which dung is produced.

The manure from different classes of stock varies considerably in character and quality. Thus, horse manure is rich, dry, and in bulk

quick to ferment and overheat. On the other hand, manure from byres and piggeries is less concentrated, contains more moisture, is cold and ferments slowly. A manure evenly rotted and of uniform composition is secured by mixing the dung from each class of stock together. It is a bad practice to keep each kind of manure in separate parts of the dung heap.

The manure should be spread over as little space as possible, kept well compressed and moderately moist. In covered yards, where cattle or pigs are kept on the manure, these conditions are easily attained. Open heaps, however, require more attention, and the manure should be compressed by wheeling each barrowload of dung over that already in the heap.

The bottom of the heap should be covered with a layer of some absorbent material such as bog mould, rough litter, &c., and a quantity of such substances also kept round the heap to retain the liquid: this material should be thrown up on the heap as it becomes saturated and then replaced by a fresh supply.

The manure heap must necessarily be situated convenient to the farm buildings, and consequently the choice of
Site of Manure Heap. a site is often restricted. The most favourable situation is on level ground where there is small chance of water gaining access to the heap from springs, higher ground, or roofs of buildings, or of the liquid draining away from the manure.

The bottom of the heap must be impervious to liquids, concrete or hard bricks laid on edge make excellent floors, which in addition to being water-tight afford a
Bottom of Manure Heap. hard surface for carting. A layer 8 to 12 inches thick of well consolidated clay makes a cheap and in many respects a suitable floor. The bottom of the heap should have a distinct slope backwards, especially when there is a retaining wall at the back against which the manure can be compactly built.

If dung is compactly built, kept well compressed, and the liquid retained as described above, and provided it receives no more water than actually falls as
Covered and Uncovered Heaps. rain, there is little necessity for a roof over the heap. The expense of putting a roof over the dung heap is seldom justified except when it can be used as a

shelter for cattle. It is very desirable to have the manure heap surrounded, with the exception of a gateway, by a retaining wall from 3 to 5 feet high. This will greatly assist in keeping the manure compact and in retaining the liquid.

Advantage is often taken of frosty weather during winter to cart out dung to the field to be manured the following

Storage of Manure in the Field. spring. The principal advantage of this plan is that it saves much time in the busiest season.

Manure treated in this way is liable to suffer loss unless it is carefully stored in the field. A suitable situation on dry hard ground should be selected for the heap, and the manure kept as compact and solid as possible : this is best attained by drawing the loads of manure over the heap, finally trimming the sides and covering with a layer of loam soil or bog mould eight to twelve inches deep to prevent the escape of nitrogen. Some absorbent material should also be placed round the heap to soak up the liquid.

Various chemical substances have been used to prevent the nitrogen escaping from farmyard manure in the form of

Ammonia Fixers ammonia gas ; none of these materials, however, has been found to be of much practical value, and their use is not recommended. Bog mould or ordinary loam soil are the cheapest and most efficacious absorbents of ammonia and liquid manure. A thin layer of such material should be spread over the heap from time to time.

The liquid manure may be utilised to advantage by mixing it with the solid dung ; by this means the whole

Utilisation of Liquid. manure is improved and there is less risk of over-heating in the heap. The supply of liquid manure is often greater than can be used in

this way, and some means must be then devised for dealing with the surplus. A common plan is to collect the liquid in an underground tank near the manure heap and periodically to pump it by means of a chain pump into a liquid manure cart for use as a top dressing for grass. Where conditions are favourable for irrigation the surplus liquid manure may be used in this way. Fresh liquid manure has a burning effect on plants, and should, therefore, be allowed to remain in the tank several weeks before application.

Dung is utilised to the fullest extent when applied in a perfectly fresh condition. For obvious reasons, however,

Time of Application. this method is practicable to a limited extent only. On most soils the best returns are obtained from manure carefully stored during the winter, and applied in the drills immediately before putting in the crops.

In districts with a moderate rainfall the practice of autumn manuring is sometimes adopted; the dung is usually spread on stubble ground and ploughed in. This system has the advantage of lessening work in spring, but it is practically confined to heavy soils which are free from weeds.

Farmyard manure is not very largely used as a dressing for grass land, because the supply on most farms seldom more than suffices for tillage crops. If a quantity of dung can be spared it may be used to advantage as a dressing for meadows. It is important that the manure in this case be applied in the autumn before growth ceases, the soluble parts of the manure are then immediately taken up by the plants.

The results of manurial experiments in this country and elsewhere indicate that dung is most economically employed

Quantity to Apply. in moderate dressings rather than in heavy applications. It should form the basis of manuring over as large a portion of the farm as is practicable. For example, suppose 100 tons of dung are available for manuring ten acres of turnips, it would be better to dress the whole ten acres at the rate of ten tons per acre, and to supplement this rather small dressing with a suitable mixture of artificial manures, than to manure five acres with dung alone at the rate of twenty tons, and to manure five acres with artificials alone. Although the manurial requirements of the individual crops vary somewhat, the principle here illustrated applies equally throughout.

To obtain the best results from farmyard manure it is essential that it be evenly spread, irrespective of the crop or
Method of Application. manner of application. In the case of root crops or potatoes it is easier to distribute the manure evenly when it is thrown from the cart with a fork along each drill than when the dung is pulled out in heaps. The extra work in unloading the manure is amply compensated by the greater ease and thoroughness with which the manure is spread afterwards. It is most important that all the lumps should be well shaken out and the manure distributed so as to form a continuous layer along the drills.

Dung should be carted, spread and covered in the drills on the same day. If left lying in heaps unspread either on arable or grass land the liquid part of the dung is soaked up by the patches of ground covered by the heaps of manure, the result being that these portions are overmanured to the detriment of the rest of the ground. If manure is not covered immediately after it is spread in the drills it becomes dried by sun and wind and much depreciated in value.

Since the introduction of artificial manures less attention has been given to compost, a material which was formerly extensively made and held in high esteem as a manurial dressing for grass land. Although the application of compost entails more labour than the use of artificial manures, there are many instances where the vegetable and animal refuse on a farm might be utilised to advantage by making it into compost. Compost consists of lime mixed with all kinds of refuse and waste materials such as weeds off stubble land, road scrapings, ditch cleanings, peat mould, leaves, flesh refuse, fish bones, &c. Road scrapings are most valuable when derived from limestone roads. Lime should be mixed in the proportion of one part lime to three or four parts of the other materials. Lime hastens the reduction of the manurial ingredients of the substances in the compost to suitable plant foods. Applications of liquid manure also assist this action and, furthermore, greatly improve the quality of the compost.

A compost heap may be made in any convenient situation. If, however, it is intended to add liquid manure, the bottom of the heap should be made watertight to prevent waste. Compost will be thoroughly decomposed and ready for application in about 12 to 18 months. To bring about more rapid and even decay of the materials the heap may be turned once or twice.

Compost is best used as a dressing for grass land and should be applied in autumn, roughly spread and harrowed with a chain harrow.

SUMMARY.

To sum up the important points in the treatment of farmyard manure :—

- 1 Select a suitable site for the heap where there is small chance of loss through drainage.
2. Make the bottom of the heap impervious to liquids.
3. Mix the manure from stables, byres and piggeries together.
4. Keep the manure compact, solid and moist

5. Allow no waste of liquid—it is the most valuable part of the manure.

6. Incorporate as much of the liquid with the solid manure as is practicable.

7. Use moderate dressings of dung and supplement with suitable artificials if necessary.

8. Do not leave heaps of manure on the land unspread.

9. Spread manure evenly ; do not leave it in lumps.

10. When manure is spread in drills cover it with the least possible delay.

11. Utilise refuse materials about the farm by making them into compost.

In connection with the subject of this article farmers should read the following leaflets issued by the Department :—

No. 17.—The Use and Purchase of Manures.

„ 34.—The Revival of Tillage.

„ 35.—The Liming of Land.

„ 36–41 (inclusive).—Field Experiments.

„ 56.—Cultivation of the Root Crop.

„ 80.—Catch Crops.

„ 81.—Potato Culture on Small Farms.

„ 82.—Cultivation of Maincrop Potatoes.

Copies of the above-mentioned leaflets, may be obtained, free of charge and post free, on application to the Secretary, Department of Agriculture and Technical Instruction for Ireland, Upper Merrion-street, Dublin. Letters of application so addressed need not be stamped.

JUBILEE OF THE IMPERIAL UNION OF GERMAN AGRICULTURAL CO-OPERATIVE SOCIETIES.

The annual general meeting of the Imperial Union ("Reichsverband") of German Agricultural Co-operative Societies, held in July last at Mainz, had this year a special interest and significance, for it also celebrated the twenty-fifth anniversary of the foundation of the Reichsverband.

Nearly 2,000 delegates attended, and the meeting was a remarkable testimony to the spread of the co-operative movement and the importance attached to it by every class in Germany. Co-operative organisations in every part of the Empire sent their delegates, many Government departments were represented, and the Grand Duke of Hesse presided at the opening meeting and attended, with his Ministers and State functionaries, all the principal festivities, besides giving a banquet at the Palace in honour of the heads of the movement and the principal foreign guests. Leading co-operators attended on behalf of a number of European countries, and the Department was represented by Mr. H. de F. Montgomery, the only delegate from the United Kingdom. The city of Mainz, too, a great trading centre, was represented by two delegates, who expressed the greatest satisfaction that their city had been chosen as the place of meeting. The greatest enthusiasm for the movement was expressed on every hand, and Herr Geheimrath Dr. Haas, one of the founders and now Director of the Reichsverband, received a number of decorations and orders, including one from the Kaiser.

The first day was mainly devoted to preliminary meetings of specialists in the various branches of co-operative work—auditors, dairy instructors and the like. In the evening a festive reception of delegates was held by the Hessian Union of Agricultural Co-operative Societies. The main work of the meeting began on the second day when, after speeches by various representative men, a number of papers dealing with co-operative problems were read and discussed. This programme was continued on the following day, when the business of the conference was concluded, and there was also a banquet to which 1,400 delegates sat down. Next morning an excursion was made to St. Goar, Rüdesheim, Bingen, and other places of interest on the Rhine.

The official address delivered by Director Haas was a valuable and interesting exposition of the history of

Dr. Haas' Address. the Reichsverband and of the fundamental principles upon which the work is based.

The organisation in its first year (1883) contained only 9 federations and 248 societies, with a total membership of 10,000. To-day, after its amalgamation with the older Raiffeisen Association, it embraces the grand total of 41 federations, nearly 18,000 societies, and a membership of over 1,500,000. This immense organisation, though it received its first impulse from Raiffeisen and Schulze-Delitsch, is, as the Director pointed out, not the work of one man nor of several men. Its development came, as it was bound to do, from below and not from above, co-operation being essentially impersonal in its nature. The Reichsverband had, he said, always pursued a policy of decentralisation, and their first rule of conduct was: "uniformity in great things, liberty in minor details." The greatest freedom had always been allowed to societies in matters of local administration, but all must be based upon the fundamental principle of organised self-help and solidarity. Herr Haas dwelt on the moral as well as the material benefits derived from the movement by the rural population and also on the efforts it had cost to teach that population that effective co-operative thought and action must be unselfish thought and action. He dealt with the question of State aid to co-operative organisations, in the shape of subventions and in the shape of credit, which had been made a ground of objection by their opponents. He declared that any State subventions received had been almost exclusively used for scientific and propagandist purposes, and only in a few isolated instances had they been applied to defraying the administrative expenses of co-operative organisations, while the credit given by Government banks was not given gratis (though the rate of interest was moderate), and was only equivalent to the advantages given to industry and commerce by State financial institutions. The application of State funds to the promotion of national prosperity through agricultural co-operation he regarded as perfectly legitimate and justifiable. The ultimate aim of co-operators was independence of all external aid, but State aid had made the rapid extension of agricultural co-operation in all parts of the Empire possible. It would be many years before they could do without it. They were thankful for it, and were able to accept it without derogation to the character of their movement as one essentially founded on

self-help. The great Steamship Companies and other industrial and commercial interests received State aid in various forms, and co-operative agriculture was not ashamed of doing the same. Another principle to which the Reichsverband had always clung was that the organisation must ever remain a neutral platform on which party politics and religious differences should never find a place, and this rule, he declared, would be adhered to for all time.

A number of very interesting papers on co-operative questions were read. Some of these were discussed, and the feeling of the meeting embodied in a resolution. The paper on the proper functions of the "Revisors" (auditors appointed by the co-operative organisations) gave rise to a most animated debate. The reader of the paper maintained that they ought not to be authorised to do anything but audit the accounts, and that any advice they gave as to the conduct of business by local societies must be given, if at all, in their individual personal capacity, as otherwise responsibilities which ought to rest on the local societies were transferred to the central organisation, which was undesirable and might be dangerous. The speakers who followed expressed views of the most divergent kind, and it was finally decided that the subject was not yet ripe for discussion and should be referred for further consideration to the Reichsverband.

A resolution was passed expressing the view that the problem of the milk supply of towns and abuses existing in the milk trade could only be successfully dealt with by the organisation, on co-operative lines, of the farmers in each milk delivery district. Other resolutions were adopted calling upon the Reichsverband to take into consideration the question of settling agricultural labourers on the land, the further systematic organisation and development of agricultural supply societies, and various problems pertaining to public health and well-being. Co-operative education was dealt with by Dr. Grabein, and a number of suggested measures for enlarging its scope were embodied in a resolution. It was claimed that instruction in the principles of co-operation should find a place in the curriculum of all universities, colleges, and agricultural schools, and that special courses should be arranged for those wishing to take official posts in co-operative organisations.

DEVELOPMENT OF THE CO-OPERATIVE MOVEMENT IN GERMANY.

The following figures indicate the growth of the agricultural co-operative movement in Germany of late years:—

On 1st July, 1904,	the number of agricultural	co-operative societies was	18,309
„ „ 1905,	„ „ „	„ „ „	19,323
„ „ 1906,	„ „ „	„ „ „	20,128
„ „ 1907,	„ „ „	„ „ „	20,973
1st June, 1908,	„ „ „	„ „ „	21,959

The average annual increase in the number of societies is therefore 900.

The total was made up as follows:—

—	Credit Societies.	Agricultural Societies.	Creamery Societies.	Various.
1st July, 1904, ...	12,477	1,754	2,713	1,365
Do., 1905, ...	13,181	1,867	2,832	1,443
Do., 1906, ...	13,635	1,977	2,931	1,585
Do., 1907, ...	14,096	2,052	3,055	1,770
1st June, 1908, ...	14,675	2,138	3,132	2,014

Of these, the following belong to the Reichsverband, the remainder being independent or belonging to other unions, such as exist in Württemberg and Baden.

—	Credit Societies.	Agricultural Societies.	Creamery Societies.	Various.
15th May, 1908, ...	12,188	2,039	1,914	1,413

There are also 41 Provincial Unions and 73 Central Co-operative Societies, making a total belonging to the Reichsverband of 17,627 societies.

The following tables, taken from the "Festschrift" or commemorative volume issued this year, show the development of the Reichsverband.

Co-operative Credit Societies.

—	Number of Societies reporting.	Number of Members.	Average Number of Members per Society.	Turnover (in marks).	Average turnover.		Paid up Capital. (in marks).	Borrowed Capital. (in marks).
					Per Society.	Per Member.		
1892	463	15,551	111	87,748,826	189,522	1,702	3,476,416	45,409,913
1895	1,097	93,417	86	166,551,225	156,533	1,747	5,554,376	83,921,862
1900	4,343	319,483	74	746,748,419	171,943	2,337	16,823,284	320,600,852
1905	10,999	959,717	87	2,798,081,738	254,394	2,916	47,150,935	1,223,247,938
1906	11,373	1,015,108	89	3,174,068,835	279,089	3,127	52,696,506	1,373,037,477

Analysis of Credit Societies according to turnover in 1906:—

0 —	50,000 Marks,	1,561 societies.
50,000 —	100,000 „	2,255 „
100,000 —	500,000 „	6,147 „
500,000 —	1,000,000 „	925 „
1,000,000 —	2,000,000 „	325 „
over 2,000,000 —	— „	122 „

Agricultural Societies.

—	Number of Societies.	Turnover.	Manures Bought.	Feeding Stuffs Bought.	Seeds Bought.
		Marks.	cwt.	cwt.	cwt.
1906	1,925	76,406,774	9,747,416	4,819,770	196,699

These societies worked:—

		Own Capital.		Borrowed Capital.
in 1892 with	957,950 M.	and	3,313,066 M.	
in 1895 „	1,054,539 M.	„	3,815,959 M.	
in 1900 „	2,223,724 M.	„	11,036,993 M.	
in 1905 „	4,750,033 M.	„	29,630,727 M.	
in 1906 „	6,228,722 M.	„	38,555,749 M.	

The mutual purchase and use of agricultural machinery is an important branch of co-operative activity and special societies are formed for this purpose. In 1908 the number of such societies in the Reichsverband was 223. These were chiefly threshing machine societies, which numbered 185. There were also 10 steam plough societies, and 28 other machine societies. The number of special co-operative machinery societies, however, by

no means indicates the number of co-operatively owned agricultural machinery in Germany. In Bavaria alone, in 1902, over 3,000 machines were in co-operative use; these included 683 threshing machines in which 16,052 members had a share.

The working capital of the special co-operative machine societies amounted to 1,566,825 marks for 101 societies.

The Reichsverband also comprises 46 co-operative electricity supply societies, which provide electricity to their members for light and motive power. In 1906 the 15 electrical societies then in the Reichsverband had a working capital of 584,543 marks.

Dairy Societies.

In May, 1908, the number of registered co-operative dairies in the German Empire was 3,032. Of these 1,914 were affiliated to the Reichsverband. The estimated amount of milk handled in 1906 by the Reichsverband dairies was 1,881,311,826 kg., and the amount of butter sold by them was 69,249,132 kg. There was, of course, a large quantity of whole milk, cheese and other products sold by these dairies in the same period.

THE CULTIVATION OF FLAX IN BELGIUM AND HOLLAND.

REPORT OF THE DEPUTATION SENT TO BELGIUM AND HOLLAND TO
STUDY METHODS OF GROWING AND HANDLING FLAX IN THOSE
COUNTRIES, JULY, 1908.

The object of the Irish Flax Growers who visited the Continent this year was similar to that of previous deputations, viz.:—to make inquiries regarding the methods of cultivating and growing the flax crop, to inspect, so far as possible, the handling of the crop at the different stages from pulling onwards, to ascertain the degree of care which Dutch and Belgian growers take to ensure a supply of high quality seed for each year's sowing, and finally to make such recommendations from the experience and information gained as Irish growers working under different conditions of soil, labour supply, etc., might adopt with advantage. In Belgium the chief centres of flax growing visited were Courtrai, Bruges, Lokeren, and St. Nicolas; in Holland, Dordrecht and the vicinity of Rotterdam. As will be recalled from the reports of previous deputations, there are three systems of retting adopted on the Continent. (1) The Courtrai system of steeping the dried straw twice, practised along the banks of the River Lys. (2) The pond system of retting, carried on in the districts known as the "Blue" districts from the "Blue" or "Blae" colour which the mud, with which the flax is covered when in the steeping pond, gives to the fibre; and (3) the dew-retting system, of little interest to Irish growers but still practised in certain districts of Belgium owing to a demand from some spinners for the resultant quality of fibre produced.

The deputation were enabled to thoroughly examine the system of dual steeping in the Courtrai district, and the "Blue" method, which is in most respects similar to that adopted in this country, during their visits to various centres in the districts around Bruges, Lokeren, St. Nicolas, and also at Dordrecht in Holland. The visit to Rotterdam at the completion of the tour enabled inquiries to be made regarding the preparation of Dutch seed for the market, and the methods adopted to obtain the best quality of Riga seed for growing in Holland.

The deputation arrived in Belgium on the 8th of July, and although the crop in that country is fully a fortnight earlier than in Holland a better inspection of the different stages might have been obtained had it been possible to arrange for the visit a week or ten days later. As it was, however, the deputation were fortunate in seeing flax being pulled, being put into steep, being taken out of steep, and in one or two cases being spread. Before being steeped the flax in the "Blue" districts is invariably green rippled in the field, and the seed after being dried and saved used for feeding purposes. This operation was in full swing in many of the fields visited. Under the Courtrai system the crop is stood up untied in long-shaped "gaits" immediately after being pulled, and allowed to remain thus loosely for three or four days, according to the weather, until it is thoroughly dried or "won." The flax is then tied up in small beets, and placed in "mitens." These "mitens" much resemble small-shaped shies or rucks. They are usually built on a light frame-work composed of three parallel wooden bars, with two upright bars at intervals to give rigidity; the flax is built in only one beet deep, so as to allow free passage of air, and when the rows reach a height of six or seven feet a slight slope is given to one side to run off rain; a protective covering of straw is then placed on as thatch, and securely fastened with ropes. After being allowed to remain in these "mitens" for some weeks, the flax is considered sufficiently dry to be built into stacks, where it is kept until such time as it is convenient to give it the first steeping in the River Lys.

As a result of inquiries into the two systems of retting, and the methods of flax cultivation generally practised on the Continent, the following are the points regarding the leading features of inquiry which appeared to the deputation of most importance, and which they have thought it advisable to group under certain definite headings.

The first point of contrast between the conditions of flax cultivation as carried on in Belgium and Holland as compared with Ireland is the character of the soil itself. In Ireland the types and characters of the soils on which flax is grown are numerous and varied. This variation in the range of Irish soils, moreover, is not confined to their actual physical nature, whether light or heavy, stony or clayey, sandy or loamy; it also occurs in

Soil.

their chemical composition, dependent in turn on rock derivation and modified to a little or even great extent by an intermixture of drift material brought from different sources of rock formation. Hence in Ireland there is a striking absence of uniformity in soil over any extended area; indeed it would be difficult to find a single field in which the soil all over can be regarded as uniform either in its physical or chemical characteristics. In Belgium the most striking thing about the soil is its absolute uniformity. Throughout all the districts visited the same light, sandy loam, resting on an equally porous sub-soil, prevailed. Though light and open in its texture, however, the soil everywhere possessed plenty of depth, a characteristic which minimises the risk of parching from drought, and renders it possible for every kind of farm crop to be grown with success. The soil when examined in the hand has a peculiarly soft clayey feel. This, it would seem, must be due to the fact that the sand particles are small and rounded, and inasmuch as that they are in no way angular or gritty to the touch, would point to the incorporation of a considerable quantity of fine clay, and humus or organic matter. In the districts of Holland visited the soil was of a much heavier type, and did not appear to be quite so uniform as that of the Belgian districts. There can be little question but that the general evenness both in size and length of the crop when pulled, which renders such a uniformity in the fibre quality possible, is in large measure due to the absence of any material variation in the type and nature of the soil.

From this peculiar lightness of the soil over most of the flax-growing area in Belgium, it will be readily understood that the preliminary cultivation and the preparation of a desirable seed bed are performed with little trouble. Land intended for flax is usually ploughed in the autumn to an ordinary depth of five or six inches. At seeding time the use of harrow and roller is availed of as in Ireland to obtain a fine, firm tilth. The harrow employed consists of a light wooden frame fitted with strong wooden tines, and the roller, which is proportionately light, is also made of wood. The seed, which is for the most part put in by hand, is invariably sown upon the harrowed surface, a subsequent rolling being considered sufficient to provide an adequate covering for the seed. Different types of sowing machines have been tried, but have not been found to give such satisfactory results as sowing by hand. In the Lokeren district, where

the holdings are small and the patches of flax grown average about half an acre each, the practice is sometimes adopted, if the soil is very light, of tramping in the seed with the feet after it is sown.

A considerable amount of variation exists in the rotation systems practised. In the Courtrai district the following was given as the most general order of cropping adopted:—

Rotation.

Clover.
Wheat.
Rye.
Potatoes.
Wheat or Rye.
Chicory or Oats.
Flax (laid down with Clover).

Around Lokeren the rotation is somewhat different:—

Rye or Barley.
Oats.
Clover.
Rye.
Potatoes.
Rye.
Flax.

In this district, a catch crop, usually parsnips or carrots, is taken between the flax and the crop of rye which follows. Under the intensive system of farming practised in Belgium catch crops are invariably availed of where possible in the rotation. Thus, in the case of flax, either the crop itself is laid down with carrots or clover, or after the field has been cleared a dressing of farm-yard manure is spread on the surface and ploughed in and a crop of late turnips grown. Where flax land is laid down with carrots, the carrot seed is not mixed with the flax seed, but each kind of seed is sown separately; the seeding given is very light—about 2 lbs. to the acre. After the flax has been removed the ground is thoroughly hand-weeded and a dressing of liquid manure applied to force on the carrots, which are grown solely for home use on the farms.

In Holland a certain portion of each farm is laid down to permanent pasture, and another portion devoted to constant tillage.

The rotation practised on the arable land was stated to be:—

Oats (fallowed until the succeeding autumn).

Wheat (top-dressed with nitrate of soda in spring).

Potatoes, Beans or Peas.

Oats.

Flax.

Oats (laid down with clover and grass).

Hay.

After the hay crop the land is usually grazed for a couple of years before being broken up again, a fact which renders the rotation much similar to that practised in the flax-growing counties of Ulster. Sometimes on freshly broken-up lea land a crop of sugar beet is grown instead of oats; but Dutch farmers regard the cultivation of the beet crop as injurious to land for flax. The reason given is that the beet crop exhausts the land unduly, or, in their own words, “makes it too cold”; this again is in part explained by the depth to which the soil must be worked to raise a successful crop of beet as well as the wide feeding range of the roots.

By far the largest quantity of seed sown annually is grown in Russia and imported from Riga. Only the

Seed. most select brands are bought and price is not allowed to interfere in securing the

highest possible quality of seed. Dutch growers are especially careful about the quality of Russian seed, of which they import annually from 3,000 to 4,000 bags, and as they pay even a higher price for it than Belgian growers, they are supposed to get even a better quality. Such importance do growers in Holland attach to the quality of the seed sown that it is a matter of comment in the trade that Dutch growers every year invariably make complaints about the quality of the Riga seed supplied to them, whereas the Belgian growers, who import ten times as much, have rarely any faults to find.

In Belgium home-grown seed does not appear to be used to any great extent, though it is so in Holland and more especially in Friesland. The general consensus of opinion regarding the merits of Dutch contrasted with Riga seed is that Riga seed produces the better quality of flax, but not so much quantity of either fibre or seed as Dutch seed.

The rate of seeding on the Continent is heavier than that allowed in Ireland. This, however, would

Rate of Seeding. appear to be a necessity, as owing to the nature of the soil, germination is not so high as in this country. Some of the crops inspected seemed to be, if anything, too heavily seeded; a close examination of fields from which the crop had been pulled and removed, showed that a large number of small worthless stalks were left remaining in the soil. As a rule, the rate of seeding runs to about 10 pecks per statute acre for Dutch seed and almost $11\frac{1}{2}$ pecks for Riga seed.

Sowing is generally done between 15th March and 15th April, and growers, as a rule, like to have their

Time of Sowing. flax as early sown as possible. In some cases the flax merchants who buy the crop on foot (*Fabricants*, as they are termed), are averse to buying any flax except that which has been sown during the month of March. Farmers on the Continent are not deterred from early sowing through fear of injury to the crop from frost; only in one district was the opinion expressed that frost had any harmful effects upon the young crop, and this merely at the stage when the plants were just coming over ground. A possible explanation for this, however, may be found in the fact that the application of potash manures to flax land was not practised in this particular district.

Contrasting the two countries, artificial manures are much more widely used in Holland than in Belgium.

Manuring. In the latter country all the crops in the rotation are heavily dressed with either farmyard or liquid manure, and this treatment is solely relied on to produce a satisfactory flax crop in its turn. A feature of Belgian farming is the value placed on manure of all kinds, and the care taken to prevent any of it being lost or going to waste. There is a liquid manure tank built of brick constructed in connection with each cowhouse and stable, and into this all the urine voided by the animals is drained; from time to time these tanks are emptied out by hand buckets, and their contents carted on to the fields in barrel-carts fitted with an emptying plug underneath, and a detachable board which ensures an equal distribution of the liquid over a space of five or six feet. The liquid manure is not

diluted in any way, and in some cases is applied during the winter to land intended for flax the following season. In other districts the custom is to apply the liquid manure to the soil some few days before the seed is sown, and there are also growers who favour the practice of putting it on the last evening before seed-sowing.

In one instance near Courtrai the deputation were privileged to inspect the pulling of a fine crop, to which, according to the statement of the grower, the following allowance of artificials per statute acre had been given:—3 cwts. superphosphate, $1\frac{1}{2}$ cwts. muriate of potash, and $1\frac{1}{8}$ cwts. sulphate of ammonia. *Fabricants*, as a rule, it was stated, did not, until recently, regard with favour crops grown by the aid of artificial manures, but this aversion may have been caused, in the opinion of the deputation, by the injudicious use of purely nitrogenous manures, such as nitrate of soda.

In respect of weeds it cannot be said that the fields of flax inspected were any freer than the general average of those in Ireland. Greater pains, ever, it was obvious, appears to be taken in keeping the land as clean as possible; the tillage of the root crop is thorough and efficient, and the opportunity thus afforded of killing and clearing off weeds availed of to the fullest. One practice which especially attracted attention was the careful way in which any weeds left on the land after the flax had been pulled were cut down with the scythe, so as to prevent seeding; these were then raked into heaps until dry, removed from the fields and burnt. The especial weeds with which flax growers in Belgium have chiefly to contend are wild camomile,—we saw many fields infested with this,—and ordinary corn spurrey (*Spergula Arvensis*), the familiar “Grun-yar,” which proves so troublesome in many of the northern counties of Ireland. Thistles, of course, were also well in evidence, and seem to be as much a source of trouble to the Belgian as to the Irish farmer. Great attention is given to the hand-weeding of the crop; this is usually begun when the flax is about a couple of inches long, and no pains are spared to remove as many intruders as appear at this stage as possible; how thoroughly the weeding is carried out may be judged from the fact that it is not uncommon to find 20 to 30 hands put on to clean a field of two acres.

The same care and skill in the handling of the crop is shown in the pulling, which is very neatly done;

Pulling.

the ends of the flax are invariably square, and the stalks lie straight together. It appeared that Belgian growers are inclined to pull the crop at a greener stage than Irish growers would care to do. Beets are throughout made smaller than in this country, and do not exceed more than from four to six inches in diameter. When the green flax is to be rippled the separate handfuls are crossed slightly in diagonal fashion, so as to be lifted conveniently and without straggling when being pulled through the rippling comb by the worker. In the blue districts the flax is in the first instance tied with bands taken from the crop itself; when the seed has been taken off, the bundles are then bound up with two bands of rye straw.

Rippling is universally practised. In the blue districts the flax is rippled as soon as possible after

Rippling.

being pulled, on account of the fact that if kept longer a certain degree of heating or fermentation would result; hence the pulling and rippling are generally done on the same day. Green rippling is done by means of an iron rippling comb; the teeth are iron, $\frac{5}{8}$ or $\frac{1}{2}$ inch in thickness, tapering to a point; these are fixed diagonal-wise in a wooden block about two feet in width and three inches in depth. This block is in turn screwed down to the middle of a strong wooden form. The two men employed in rippling sit astride of the form on either side of the comb, and draw the separate handfuls of flax firmly and quickly through the teeth to detach the seed. Each rippler is usually attended by a woman who carries up the bundle of unrippled flax and when the seed has been taken off passes it on to be bound up preparatory to steeping.

In order to prevent heating, the seed bolls are at once spread out and exposed to the drying influence of sun and air; large cloth covers are chiefly used on which to spread out the seed to dry, though the flattened clay surface of the open field is also employed for the purpose. The rippled seed when dried and cleaned by being passed through a winnowing machine is used for cattle-feeding. So far as could be learned, it is mainly used raw, or mixed with ground rye or rye meal, and is fed to calves and pigs.

The steeping process is either carried out according to (1) the system practised in the blue districts known as pond-steeping, and similar to that practised in this country; or (2) the Courtrai system of double-retting as practised along the banks of the River Lys; or (3) the system of dew-retting. This latter system, though it appears to be slightly on the increase in some districts, did not receive any attention on the part of the deputation, inasmuch as it is not applicable to Irish conditions.

The Blue-Steep System.

The pond system of retting was seen both in the Bruges and the Lokeren districts. The flax is pulled in the ordinary way, and the beets (from which the seed has previously been taken off as described) put into the pond perfectly on the flat to the depth of about five rows, or as much as the water will cover. The water is usually collected from percolation after rain and, as the ponds are nearly full before steeping begins, the worker stands in the water and builds the flax beets in, row after row, to the requisite depth across the pond. In the Bruges district when the pond is filled the surface of the top rows of flax beets is covered with straw to keep off the sunlight, and on this again a quantity of sods are placed to press the flax evenly under water much after the Irish method of stoning. In the Lokeren district the mud which accumulates at the bottom of the pond year after year is employed to cover the top row of flax. The worker engaged in putting the flax into the dam uses a spoon-shaped wooden shovel; with this he, in the first instance, throws a quantity of water over the top rows of each section as it is put in until it is thoroughly saturated; he next gets a heap of mud scraped from the bottom of the pond and usually collected at intervals along the side; this he now shovels over the upper surface of the flax, effectually covering it with a layer from four to six inches thick. Each section of flax is treated in the same way, so that when the filling of the pond is completed the top surface presents a level expanse of soft black mud. The main purposes served by this mud covering were thus explained to be (1) to keep off light, and so prevent discolouration; (2) to give the fibre the requisite blue or "blae" colour; (3) to make the retting process take place more uniformly throughout the entire mass; and

(4) to serve the purpose of stones and thus weight the flax continuously under water. Though the upper surface of mud is quite compact and continuous, that which adheres to the top of each beet is easily removed by giving the latter one or two plunges in the water before it is taken out. When sufficiently long in the steep the flax is not thrown out by hand as in this country, but is lifted out by means of a fork. The worker standing on the side of the pond detaches each beet from the heap, and after plunging it down once or twice in the water to remove the mud, places the fork underneath it, and deftly lifts it without any straggling to the bank. The method of testing whether flax is sufficiently watered or not is much similar to that widely practised by home growers; a single stem of flax is taken and broken through by pressure of the fingers at two places five inches apart; if, on forcing the detached part of the stem, the inner portion separates freely from the outside covering of fibre, or, to put it the reverse way, if the fibre works cleanly from the "pipe" and without breaking, the flax is considered to be sufficiently watered and ready for taking out of the pond.

It is worthy of remark that in the blue district the water in the ponds is entirely stagnant during the time the flax is being retted, and no further water is allowed into the pond after the flax has been put in.

The Courtrai System of Double-retting.

This method of retting is entirely peculiar to Belgium and Holland, and is practised along the banks of the River Lys for a distance of 25 to 30 miles. The flax is either grown locally in the districts which adjoin the river, or is brought from long distances by the merchants or *Fabricants*, as they are termed; the latter purchase the crop generally on foot from the growers, who contract to deliver the produce as dried straw ready for steeping at the river side. Prices range from £10 to £16 per statute acre, and for this figure the grower pulls the crop, takes off the seed (which he usually counts as meeting the expense of handling so far), and delivers it as dried green straw in the month of March or at whatever time specified to that portion of the river where the merchant's steeping place is situated. Two tons of dried green straw per statute acre with the seed off is generally considered a good crop.

After being pulled the flax is set up in long-shaped "gaits," and allowed to remain so until thoroughly dry. When dry it is then tied up in small beets, and built into narrow "shiegs," or "mitens," as before described. Here it is allowed to stand for three weeks or so to complete the drying process; it is then built into regular stacks until such time as it is required for transportation to the river side. The manner of crate-steeping in the River Lys has been so fully described in the reports of former deputations that we do not feel called upon to mention it here. We noticed, however, that before the first steeping the flax was graded into three classes—(1) coarse, (2) fine, and (3) short—according to length and quality.

The duration of the steeping season in the River Lys is definitely fixed, and extends from 15th April to 15th October; outside that period any steeping done in the river is entirely at the owner's risk. As a proof of the care with which the river is preserved for steeping purposes, the deputation learned that boat traffic on the portion of the river where steeping is practised is entirely prohibited between the two above-mentioned dates. The factors which in Belgium are regarded as most operative in influencing the number of days which flax requires to be steeped in order to be sufficiently retted are (1) the temperature of the steep water, and (2) the nature of the flax straw itself. In reference to the former point, inquiries showed that the temperature of the river at the opening of the retting season in April is from 10 to 14°C., or 50 to 52°F.; in May and June it reaches 18 to 19°C., or 64 to 66°F.; and in July 20 to 24°C., or 68 to 75°F. The most favourable temperature for first steeping is 16 to 19°C., or 60 to 66°F.; for second steeping a temperature of 20 to 24°C., or 68 to 75°F., is required, and flax is never steeped a second time until this temperature is reached. The poorer qualities of flax are usually the earliest steeped, and as at this time the process takes longer to complete, the quality of the early-steeped flax is not so good as that which is put into the river when the temperature is more favourable. Good strong flax requires ten to twelve days for first steeping, and for second steeping six to eight days is the average time. The period usually allowed between each steeping is from four to five weeks. After first steeping the flax is taken out of the crates, and put up in "gaits" or "carpettes," as they are termed; these are turned from time

to time inside out until thoroughly dried; the flax is then rebound in similar bundles as before and re-stacked until it is convenient to give the second steeping.

Such flax as was observed spread in Belgium during the visit was spread on ploughed land, a practice not favoured in this country. This, it is right to observe, would seem to be solely done on account of there being no grass land available for the purpose. The flax is spread rather thicker than is usual in this country, and a space of about nine inches is left between the rows to facilitate the process of turning. In Holland putting the flax up into gaits to dry is practised in preference to spreading it on the grass. This method, it is claimed by growers, costs far less labour, and there is no risk of the straw being injured by worms or insects if wet weather should necessitate it being kept too long on the grass. The length of time flax is kept spread on the grass largely depends on the degree of retting it has reached when taken out of the pond. As a rule, however, growers like to take it out when somewhat hard, and afterwards give it two or three weeks on the grass to soften; during this time the flax rows are turned two or three times with a light pole about nine or ten feet long. Especially after a shower of rain it is considered advisable to turn the flax. The object of this is to ensure that the bleaching will be thoroughly uniform, and that no green or discoloured parts may appear through insufficient exposure to alternate rain and sunlight.

In the blue districts, where the farms are small and the average holding does not exceed ten acres, **Scutching.** hand-scutching is general. Hand-cleaned flax commands the same price from buyers as mill-cleaned, though the former is mostly preferred owing to its suitability for certain spinning purposes. On many of the farms one man working with a hand-roller and a hand-scutching blade can clean above $1\frac{1}{2}$ stones of flax per day, or more, according to the quality of the straw. The quantity of tow produced according to this method appears to be small. The deputation visited a couple of very large co-operative mills, one of which was in full work. At one of these mills flax of very poor quality was being cleaned, and the scutchers working at it were being paid by the piece. It was explained, however, that when good flax was being cleaned, in order to check any tendency to injure the sample through hurried work, the men were put on a daily wage. The

average output of cleaned flax by each scutcher per day was given as 3 stones. The hands or the blades of the mill were twelve in number, made of wood about three-eighths of an inch thick, and bolted on to a light iron rim four feet in diameter. In another mill the handles were eight in number, and made of light iron; but the diameter of the rim was proportionately smaller. At the co-operative mill the price charged for scutching was 1*d.* per lb. if the tow were taken away; if the tow were left, the use of the mill was given free to the member who was having his flax cleaned, but during this period he was responsible for payment of the scutchers employed.

On the whole, the quality of the labour appears more efficient than that at home. This, no doubt, is accounted for by the experience gained in an industry which has been carried on for such a length of time, and in which fathers and sons have succeeded each other for generations back. The cost of labour was stated to be on the increase, owing to the number of small village industries which are now being started in Belgium and Holland and which are attracting the country population owing to the possibility of earning higher wages.

Workers on the Lys are employed all the year round and, whether scutching or assisting in the drying or steeping, are paid alike at the rate of 2*s.* 5*d.* per day. The wages for pulling approximates to 18*s.* per acre with food. The hours of a typical working day during the pulling season are as follow:—5 a.m., start work; leave off at 8 a.m. for breakfast, which occupies half an hour; at midday, dinner, with two hours interval; start work again at 2 p.m. and continue till 4.30, when coffee is given; begin again at 5 p.m., and cease work at 8 p.m., after which supper is provided. This makes a day of twelve working hours in all.

The deputation are of opinion that the following points in connection with flax cultivation and treatment are worthy of attention from Irish growers:—

Recommendations.

(1) Catch crops, either turnips, rape, or vetches, might with advantage be put in by Irish farmers on flax land so soon as the crop has been removed. This practice has not before been adopted in this country owing, no doubt, to the mistaken belief that flax as a crop takes an undue amount of plant.

food out of the soil. The success of the catch crops after flax in Belgium entirely disproves the idea previously held, and is well worthy of imitation in this country, particularly in an early season and on dry, clean land.

(2) From observations in Belgium, the deputation are inclined to the view that early sowing, so far as weather conditions will possibly admit, should be more widely observed in Ireland.

(3) Owing to the success which unquestionably attends the use of liquid manure in Belgium, the suggestion occurs that where the nature of the soil permits, Irish growers might test the value of this application for fibre production on a portion of their flax fields, and note results.

(4) Irish growers should insist on their flax being tied up in smaller beets of uniform size. This precaution enables the crop to be more conveniently handled in every subsequent stage.

(5) From the inspection of the blue steep district, it appears desirable that Irish growers should take care before putting on the stones to cover the top rows of flax in their dams with straw, rushes, bracken, or other suitable material, in order to exclude light and prevent discolouration. Mud from the bottom of the dams could not be employed in this country, not being absolutely pure, as it is in Belgium; consequently the fine grit it contains, if washed into the flax, would be likely to seriously injure the fibre when being cleaned.

(6) It might be advantageous to suggest that flax growers should experiment on turning the flax on the spread field, as practised in Belgium; trials might also be instituted to determine the most advantageous length of time flax should be allowed to remain on the grass, taking into consideration the stage of retting attained when removed from the steep.

(7) The deputation do not see their way to advocate the general adoption of green rippling in Ireland, owing to the danger of adverse weather for saving the seed.

(8) As a result of inquiries in Rotterdam regarding the quality of the Riga seed obtained by growers in the two countries visited, it is recommended that the Department should take some steps to ensure that Irish growers may obtain Russian seed of the same high quality as that supplied to Belgium and Holland. The means of attaining this end is a matter for consideration, but

it is suggested that the Department should secure a representative to look after the interests of Irish growers in the chief seed-growing districts of Russia, and if possible at the time the seed crop is being marketed.

In common with former deputations, the deputation of this year have also to acknowledge a debt of gratitude to the gentlemen who showed them round the several districts, and, besides supplying valuable information, brought them directly into touch with those in the best position to furnish particulars regarding the subject matter of inquiry.

(Signed),

JEROME MAHONY,
JAMES ROBINSON,
M. HAMILTON,
TIM. COTTER,
THOMAS CHRISTY,
TIM. J. O'DONOVAN,
MICHAEL COAKLEY.

FORESTRY IN DENMARK.

The following particulars regarding the forestry conditions and customs in Denmark were obtained partly during a short visit to the principal forest districts in the country and partly from figures and statistics supplied by official publications and sources of information. They are chiefly given for the purpose of demonstrating the development of State and private forestry in a country in which the conditions of climate, land utilization, etc., closely resemble those which prevail in Ireland. Prominence is therefore given to such matters as climate, divisions of land surface, etc., so that a fair comparison may be made between the conditions existing respectively in the two countries, and enable an opinion to be formed of the possibilities of forestry development in Ireland when dealt with in an energetic manner by State and private agencies.

With the exception of the island of Bornholm, the whole of Denmark lies between the 54th and 58th degrees of latitude, and the 8th and 13th degrees of longitude. The kingdom consists of the Peninsula of Jutland, and a number of small islands lying between the North Sea and the Baltic, and being surrounded and intersected by sea no part of the country is outside the influence exercised by sea winds upon climate and vegetation.

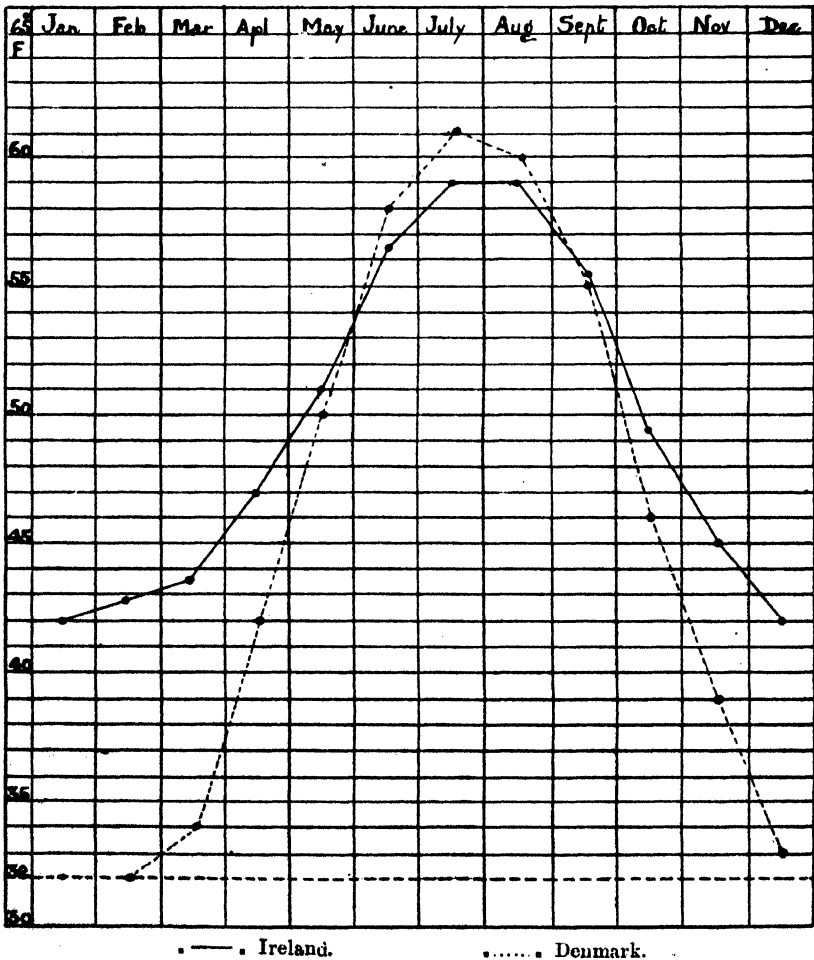
The total area of the country is 9,373,000 acres, of which more than two-thirds, or 6,247,000 acres, are in Jutland, 1,808,640 acres in the principal island of Zealand, and 823,000 acres in the island of Funen, the remainder lying in a number of small islands within short distances of the larger areas.

The physical features of the country are characterised by a surface which is nowhere broken by great differences of level or exposures of rocky formations. The only approach to hill ranges is found in a low central ridge running through the southern part of Jutland, and consisting of terminal moraines deposited during an early period of glaciation. Compared with Ireland, therefore, the country generally possesses a much more uniform aspect and surface, and is devoid of that alternation of mountain, valley, and plain, and rapid change from fertile to barren soil which constitute such an outstanding feature in Ireland.

In comparing forestry features in any two countries, the importance of climate cannot be over-estimated. A frequent source of error in this connection, however, arises from a

Climate. comparison of annual means of rainfall and temperature only, leaving out of account monthly variations, extremes of heat and cold, prevailing wind currents, and distribution of rainfall throughout the year. To avoid this error, the climates of both countries have been dealt with rather fully as regards the points named.

Diagram I, showing Monthly Mean Temperature in Denmark and Ireland.



In a general way, the climates of Ireland and Denmark are

very similar. As might be expected in view of its geographical position, the mean and winter temperatures are lower in the latter, the mean being on the average about 50° F. in Ireland, and 45° F. in Denmark. The monthly means throughout the year are shown in Diagram I., and it will be seen that the summer means for each country have practically the same thermal values, but that the winter means are 10° F. lower in Denmark.

A comparison of the absolute and mean maxima and minima recorded at individual stations in the two countries brings these features out more clearly. In the course of eighteen years in Denmark and thirty-six years in Ireland these were as follows:—

	DENMARK. †		IRELAND.*	
	Interior. †	Coast. †	Birr Castle. *	Dublin. *
Absolute Max., ...	91°—93° F.	82°—86° F.	89° F.	87° F.
Absolute Min., ...	—11° F.	0° F.	3·9° F.	13° F.
	W.	E.	W.	E.
MEAN MAXIMA.	(Fano.)	(Copenhagen)	(Valencia.)	(Dublin.)
January, ...	35·4° F.	34·5° F.	49·1° F.	45·8° F.
July, ...	67·1° F.	71·8° F.	64·0° F.	66·5° F.
MEAN MINIMA.				
January, ...	29·2° F.	26·2° F.	39·9° F.	37·3° F.
July, ...	55·2° F.	53·4° F.	53·8° F.	54·0° F.

† Meteorological Institute (Copenhagen) records.

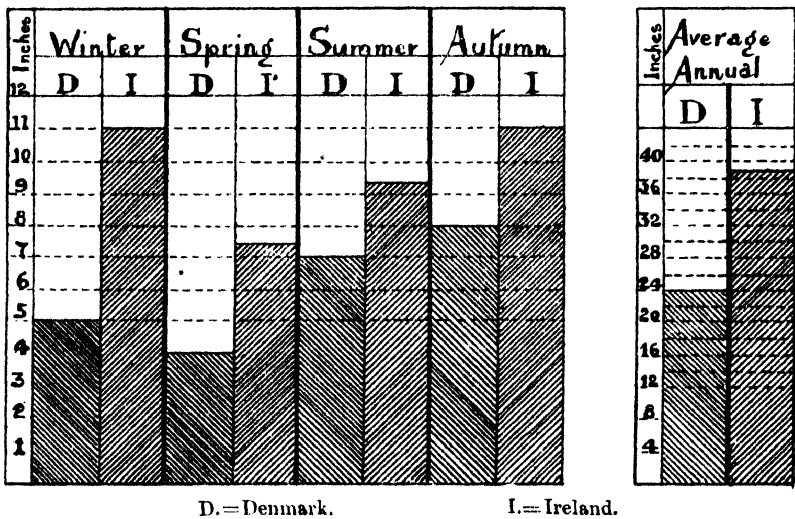
* Meteorological Office (London) records.

The above data explain the fact that such evergreen trees as *Pinus insignis*, *P. maritima*, *Cupressus macrocarpa*, and numerous trees and shrubs belonging to the warm temperate zones are able to develop uninjured by winter cold in Ireland, but have a very limited existence in Denmark. Deciduous trees, on the other hand, such as *Platanus*, *Robinia*, *Juglans*, and others, requiring comparatively warm summers, thrive in Denmark as well as, if not better than, in Ireland, and the same may be said of the majority of trees indigenous to the cold temperate zones.

The rainfall in Denmark and Ireland is shown in Diagram II., and here again the chief difference occurs in winter. The average winter rainfalls at Fano and Valencia, Danish and Irish stations similarly situated, are respectively 5·3 and 17·3 inches. The

number of rainy days is, on the average of a number of years, 156 days in Denmark, and 220 days in Ireland. While the lower rainfall of Denmark and the fewer number of rainy days are probably advantageous to the development and ripening of agricultural crops and fruit, it is possible that the growth of many coniferous trees is better stimulated by the damper climate of Ireland. The idea, however, that the more rain the better trees, in general, grow is only correct when the rainfall is accompanied by certain conditions of soil and temperature which are not always present in Ireland, and it is doubtful if the heavier rainfall in the latter is such an advantage as many suppose.

Diagram II, showing Seasonal Rainfall in Denmark and Ireland.



The prevailing winds in both countries are westerly, amounting to 48 per cent. of the winds from all quarters in Denmark and 52 per cent. in Ireland. Except on the coast of Jutland, where every fourth wind is said to be a gale, it is probable that the strength of the westerly winds in Denmark is much less than similar winds in Ireland. Trees grow well, and attain a fine height, almost to the water's edge on many of the islands in Denmark, and one seldom sees, outside Jutland, that wind-swept appearance in isolated trees and small clumps which is such a painful feature in Irish arboriculture. The flat nature of the country of Denmark, however, renders particularly exposed sites very rare, and that mutual shelter which is such an advantage to trees growing in thick masses is easily obtained.

The soils practically over the whole of Denmark are of glacial origin, and are due to two distinct periods

Soil of Denmark. of glaciation. The ice sheet of the earlier period spread over the country in a southerly direction from the mountains of Norway, and as it retreated left deposits of sands, gravels, and clays which were subjected to excessive submergence and flooding upon the melting of the ice, leaving them poor in lime and other elements of mineral fertility. What are described as the "islands of hills" in Jutland represent the terminal moraines deposited at this epoch, and the drift to the west of them is of the same age. At a subsequent period of glaciation the ice flow passed over the islands and the east side of Jutland in an easterly direction, and the drift from this covered up most of the deposits left by its predecessor. The soils formed from this drift are much more fertile than those of the earlier age, having been subjected to less washing and containing a fine percentage of lime.

The main result of those geological phases has been that the centre and west of Jutland consist principally of desolate heaths or peat bogs of an extremely sterile character, exposed to strong westerly winds which have covered almost the entire coastline with dunes and drifting sands. In East Jutland and the islands generally the soils consist of sandy to clayey loams, gravels, and clays, with occasional patches of exposed chalk or tertiary beds, the majority of which are well adapted for cultivation and of considerable depth.

While forestry in West Jutland, therefore, is carried on under the greatest difficulties as regards both soil and climate, the conditions elsewhere are exceptionally favourable for its development, the absence of rocky subsoils rendering the growth of timber much more uniform than is possible in many parts of Ireland. The uniformly low level of the surface, again, enables every acre which is capable of being maintained in a fertile condition to be turned to account, and no elevations exist which are beyond the vertical limit of profitable tree growth.

From an economic or political point of view, the main feature common to both Ireland and Denmark is

Division of Land. the fact that agriculture is the chief industry in each and constitutes the bulk of the national wealth. The ideal object to be attained in either case is the utilisation of every acre of land to the best advantage, and under such circumstances forestry must be judged on its

merits as a rural industry, and not from a sentimental or ornamental point of view. The following figures indicate how this ideal has been attained up to the present in each country:—

Chief Divisions of Land in Percentages of Total Area.

	Denmark.	Ireland.
	1900.	1905.
Arable,	66·7	22·9
Permanent Pasture,	8·0	52·1
Marsh, Bog, etc.,	4·0	7·3
Forest, Plantations, and Hedges,	8·2	1·5
Heaths and Dunes, or Mountain Land,	10·5	11·1
Roads, Water, Building Land, etc.,	2·6	5·1
	<hr/> 100·0	<hr/> 100·0

From the above table it is seen that the percentages of arable and pasture, and mountain and heath land together are practically the same in both countries, and that the chief difference lies in the proportion of woods and forests, which, after deducting 1 per cent. for “hedges” in the Danish figures, amounts to over 5 per cent. in favour of Denmark. As the area under woodland is increasing at the rate, taking the average of recent years, of about 15,000 acres annually, while that of Ireland is decreasing, it is obvious that the Danes, in face of a set of conditions similar in many important respects to that prevailing in Ireland, are pursuing a policy diametrically opposed to the one being carried out in the latter country, and this fact alone opens up an interesting question which deserves serious attention on the part of the Irish economist and landowner.

The indigenous forests of Denmark, which in prehistoric times covered a large proportion of the country,

Area under Trees. consisted of practically the same species as those forming the natural forests of the British Isles. In the peat bogs, remains of Scots pine and birch are most frequent but the former appears to have died out at an early period and to have been succeeded, as was the case here, by oak. Following the oak, the beech seems to have subsequently spread over a large area of the islands and the east of Jutland, and to have killed out or suppressed the oak in many places, and in this respect Danish forest history differs from that of Britain, in which the beech cannot prove its title to the term “indigenous.” Patches of oak scrub still exist along the west coast of

Jutland, but under existing conditions it is unlikely that the beech ever reached so far westward as to interfere with the oak there.

In the year 1820 the forest area of Denmark was about 419,000 acres, or less than 5 per cent. of the total area, and the lowest recorded. This was regarded as insufficient by the more progressive economists of the country, and Minister Raventlow receives the credit of inaugurating the policy of forest extension which has advanced with little interruption for nearly one hundred years. The most notable feature in this policy, although not at first successful, was the planting of the Jutland moors and heaths, which was originally commenced, about 1760, near Viborg. But the great movement in reforestation throughout Jutland, and to a less extent over the whole of Denmark, was originated by Col. E. J. Dalgas in 1866, after the loss of Schleswig. Col. Dalgas set himself the herculean task of reclaiming, by draining, marling, and planting, some one to two millions of acres in the west of Jutland, and lived to see this work in a fair way of being accomplished through the agency of the "Heath Society," which was founded by him and which will be dealt with later.

The present forest area, according to official figures for 1902, consists of 740,000 acres, in which are included "hedges" or belts of trees for shelter and some 100,000 acres of unplanted land. The ownership of this area is as follows:—

State—Ordinary Forests,	.	.	.	20 per cent.
State—Protective Forests,	.	.	.	7 „
Corporations, Communes, etc.,	.	.	.	10 „
Private Owners,	.	.	.	63 „
				<hr/>
				100 „

Of the total area under wood, 240,000 acres are stocked with beech, 125,000 with spruce, 75,000 with mountain pine, and 37,000 with oak, leaving about 160,000 acres unclassified or mixed. The total annual yield of wood throughout the country is estimated at 1,000,000 cubic metres, of which one-third, or some 350,000 tons, consists of commercial timber, the remainder being poles, firewood, etc. A very large proportion of the woods, however, especially those in Jutland, are immature, and the present yield must be regarded as below the normal. A forest on ordinary soil and in normal working order is expected to yield about 120 cubic feet of solid wood per acre annually, equal to about one ton of commercial timber, so that the present yield is obviously low.

The State forests cover an area of 136,000 acres, of which 60,000 or so are in Jutland, while about 96,000 acres of land was purchased between 1862 and 1902 by the Downs and Dunes Commission for coast protection, and by the Forestry Department for forest extension.

**State Forests and
Heath Plantations in
Jutland.**

The bulk of these heath plantations have been planted within the last thirty years, and bring in little or no revenue as yet. Whether they will ever return the money invested in them is very doubtful; but there is no question about their effect upon the landscape and local climate. The land they are growing upon is practically pure sand, and is purchased by the State at a cost of about 20s. to 30s. per acre in fee-simple, £42,000 having been spent in this way between 1867 and 1892. The history of the heath plantations in Jutland is one largely of experiment and failure. In the first attempts Scots pine was largely used, which was said to grow well for a time, but ultimately became affected with the "leaf-shedding disease" (*Hysterium pinastri*) and attacked by the pine-shoot moth (*Tortrix buoliana*). Trials were subsequently made of birch, various conifers, etc., until the surviving species resolved themselves into three only, Norway and white American spruce and mountain pine to begin with, and after these had improved the soil and provided shelter against wind, other and more valuable species were introduced. On the poorest soils and the more exposed sites mountain pine (*Pinus montana uncinnata*) is usually planted pure at the outset, either in pits about six feet apart, or on ground cultivated and ploughed to remove the iron pan below the surface. Near the coast, where nothing but pure sand occurs, pit planting is the rule, the surface having been first fixed by marram grass either naturally or artificially planted. As the exposure decreases, white American spruce is usually mixed with the pine in alternate rows, and further inland still the common or Norway spruce takes its place wherever the soil is sufficiently good to ensure its success. The invariable association of spruce and mountain pine is partly the result of experience, partly of a theory of Muller's that symbiotic fungi or mycorrhizae on the roots of the pine collect nitrogen, which becomes available for the spruce, although the suppression of the heather by the pine probably play an important rôle in the growth of a surface rooting trees of any species.

Where the heather has gained a firm footing on the surface and iron pan has formed beneath it, the soil is broken up by cultivating and ploughing with specially constructed implements.

The heather is first burnt, and the surface harrowed or broken up by the plough during one or two years. The subsoil is then broken into by deep ploughing with a specially constructed plough to a depth of twelve to twenty inches, so as to destroy the pan below the surface, and planting of spruce and mountain pine follows in rows about five or six feet apart. As the heather encroaches upon the trees the space between is ploughed as long as necessary, as it is found that the spruce makes little headway amidst a surface growth of heather.

The preparation of the soil in this way occupies a period of five years, and the cost averages about 50s. per acre. In planting, about 2,800 spruce and 1,400 mountain pines are used per acre, at a cost of 35s. per acre for plants and planting, 2s. 3/4. per 1,000 being paid for planting, and 6s. per 1,000 for plants, making a total cost of rather more than £4 per acre. Fencing is not required, and, practically, rabbits do not exist. Plantations formed on these lines usually remain untouched for fifteen or twenty years, when the mountain pine is gradually cut away from the spruce, leaving the latter as a pure crop. Where mountain pine has been used alone, it is allowed to grow up to a height of twenty to thirty feet, which is about the limit of height growth for this species, and is then thinned by taking out alternate rows. The cleared rows are then replanted with more valuable species, such as Sitka spruce, common spruce, Japanese or common larch, Douglas fir, beech, birch, etc. On the poorer and more exposed soils this work has not been carried out sufficiently long to allow the results to be seen, but at Blasbjerg, within two miles of the west coast, Sitka spruce appears to be the most promising species, making growths of two to three feet in a year at eight or ten years of age.

In the older plantations further inland silver fir has been successfully used for many years, and beech is being extensively used for under-planting. The ultimate development of timber trees on the Jutland heaths appears to be fairly satisfactory in the case of the more suitable soils and species. Spruce and silver fir attain a height of about seventy feet in as many years, and produce from 4,000 to 5,000 cubic feet per acre in the forests in the interior, but nearer the coast the results are not so good. It is doubtful, indeed, if commercial timber will ever be produced in the coast plantations, although firewood, charcoal, tar, fencing wood, etc., have been turned out of them. The mountain pine and white American spruce attain a height of about twenty feet in about thirty or forty years, after which the height growth of the spruce is very slow, and that of the pine ceases altogether.

The chief difficulty appears to be the extreme poverty of the sand and its close texture, preventing aeration below a certain depth. Unfortunately for Jutland, the one species which might have succeeded under such soil conditions, *Pinus maritima*, will not survive severe winters, and the example of the French foresters in Gascony cannot be followed. The value of the spruce and silver fir timber produced in the interior is about 3*d.* to 4*d.* per cubic foot, which is worked up in small local mills for building and other purposes. In districts with little peat, firewood can also be readily disposed of, and mountain pine makes about 4*s.* 6*d.* per cord when cut into lengths. The net yield of the State heath plantations in the year 1906-7 was only 2*s.* 8*d.* per acre from the planted area; but, as already pointed out, the expenses in connection with new work are high, and the plantations themselves for the most part immature. The true financial results can hardly be estimated for another fifty years or more; but it may be of interest to state that the capital value of State heath plantations is assessed for taxation purposes at £176,000, a figure which is doubtless steadily increasing as time goes on.

The character of the forests and the methods of silviculture in East Jutland and the islands comprising the remainder of the kingdom are entirely different to those already described. The State forest area is divided into twenty-five districts, with an average of 2,000 to 3,000 acres in each. A district is in charge of a conservator (Dan-Skovrider), and under him work the foresters in charge of individual forests, with their assistants and rangers. The *personnel* of the official staff consists of 3 Over-foresters, 23 Skovriders, 11 Forest assistants and others of lower rank. The majority of the State forests are of ancient origin, and indigenous to the soil, and the work of extension has been limited by the better character of the land, which gives it a greater value in the eyes of the agriculturist.

Beech and oak are the most common species grown in the better soils, with patches of spruce on poor or wet land. As the area under oak is mainly occupied by young trees the chief revenue is derived from beech, which is worked on a rotation of 110 to 120 years. Beech is both planted and regenerated naturally, spruce is planted, and oak usually sown in furrows. The methods of preparing the ground for natural regeneration are very thorough, and are practically

a speciality in Danish forestry. The thinning of the mature crop, in the form of " preliminary " and seed fellings, is carried out much as in other parts of the Continent of Europe where the compartment system of regeneration is adopted. About 100 to 150 trees per acre are left standing until a good seed year occurs, which in Denmark happens about once in eight or ten years. After this is assured the cultivation of the surface beneath the trees commences by raking off the dead leaves, sticks, and other *débris* from the old crop. The soil is then ploughed as deep as possible by means of a strong plough with a disc coulter to a depth of six or eight inches, and double-harrowed. After the fall of the seed in autumn the surface is rolled for the purpose of covering the seed, and if the latter is deficient or irregularly distributed additional seed is sown by hand. The majority of the mature trees are then removed, leaving sufficient to shelter the seedlings from frost, and these are removed gradually during the next five or six years. Occasionally, where the surface is covered with a turf of raw humus, lime is applied to correct acidity and assist decomposition.

Under favourable circumstances the result of the above method is a dense crop of seedlings, numbering in some instances 100 seedlings per square foot at one year of age, and 700,000 per acre at ten years. On stony or rocky ground it would, of course, be impossible to cultivate the ground in the way described, but the loose, light soil presents no serious obstacles in the Danish forests.

Where natural regeneration is not attempted, or the conditions are unfavourable, planting is adopted. As a rule, broad shallow furrows are taken out with the ordinary forest plough from four to five feet part. Seedlings (2 yr.) are planted in them in bunches of five to ten plants at every three feet, or at the rate of about 50,000 per acre. This method of planting is intended to produce a thick crop which will cover the surface as quickly as possible; but it involves a heavy waste of seedlings. In many instances, where a dense crop of natural seedlings has appeared, square sods are lifted out with the spade, carried in hand-barrows to the planting ground, and set out without disturbing the roots. In the latter case the labour only has to be considered, but in either method the cost per acre must be higher than that of dibbling in or planting seedlings on the British principle. The chief danger to which beech seedlings are exposed is the damage done by late spring frosts in May, and in low-lying places the plants

are often cut back annually until they reach a height of ten or fifteen feet. As a preventive against this evil a method has been adopted in the Copenhagen forest district which has been attended with great success, both in the case of beech and silver fir. This consists in planting birch in advance of the more tender species, and filling in with the latter some four to eight years later. In some instances the birch is planted in rows twelve feet apart, in others six feet apart, and five feet between the plants. The close planting gives the best results, as the overhead shelter is more complete, and is provided in shorter time, while the surface growth is suppressed more thoroughly, to the advantage of the other species. The expenses of the method over ordinary planting consists in the pruning of the birch as the beech or silver fir grow up, and its removal in about twenty years time. The final planting is effected at less cost on account of the smaller number of plants required per acre, while the crop develops much more readily than when planted without shelter.

The after treatment of the beech crop consists in clearing out weeds, rubbish, and objectionable seedlings at the tenth year or so, after which gradual thinnings are made at five to ten year intervals until the crop is nearly mature. These thinnings are heavier than those usually regarded as suitable for beech, the result being that the trees are possibly not quite so straight and clean as one may see elsewhere. The heavy yield of timber from the thinnings and the rapid growth made by the main crop on account of the space allowed it, however, lead to very favourable financial results. The yield of timber during a full rotation in average soil will often amount to ten or twelve thousand cubic feet per acre, half of which is derived from the thinnings, and the remainder from the final fellings. The average price of beech timber of all qualities is about 6*d.* per cubic foot, varying from 3*d.* per foot for firewood, to 9*d.* or 10*d.* for large clean butts. The money return per acre throughout a rotation of 120 years is, therefore, from £250 to £300, equal to an average annual return of 40*s.* to 50*s.* per acre, from which working expenses (probably 15*s.* per acre) must be deducted. These results are chiefly due to the increased demand for beech following the development of the export trade in butter, the kiels and boxes in which the latter is packed being largely manufactured out of home-grown beech worked up in local factories and saw mills. The growth and development of beech in Denmark resembles very much that taking place in Ireland.

Good crops attain a height of 100 to 120 feet in height, with individual trees having a cubic content of 100 to 200 feet. One of the largest trees near Copenhagen has a height of 120 feet, and contains 350 cubic feet of timber.

Oak is usually sown in furrows as a pure crop, with the intention of underplanting it with beech later. Acorns are obtained from various sources; but Danish or Dutch seed is preferred to French by most foresters. In the forest of Count Fris, near Horsens, an instance of oaks raised side by side from French and Danish acorns show a marked difference, the former being badly cut back by winter frost, while the latter are uninjured. The pedunculate variety is invariably preferred to the sessile-flowered, although the reason for this preference is not clear, as the latter usually makes a quicker and cleaner growth. While the oak does not attain the height and dimensions in Denmark as is the case further south, it still reaches a fair marketable size and value. Trees of 80 to 100 feet in height and from three to four feet in diameter at the base are not uncommon on the better soils, and are valued at 1s. to 1s. 6d. per cubic foot.

Spruce and silver fir are usually planted in groups on the poorer soils. Two to four-year-old seedlings are planted in furrows or patches prepared by taking off the sod, and about 4,000 plants are used per acre. The crop is allowed to grow thick and close to begin with, but between the twentieth and fortieth years heavier thinnings are usually made than would be considered safe in Ireland, taking into account the danger from wind. As the crops approach maturity, which in the case of spruce takes place between 70 and 100 years of age, they are frequently opened out and underplanted with beech, the object being evidently that of increasing the area under the latter species as much as possible. Spruce becomes badly affected with heart rot at a mature age, possibly on account of the dry soil and climate, but silver fir does remarkably well when not attacked by chermes. A fine group of the latter stands in the deer park at Jagersborg, near Copenhagen, containing trees 130 feet in height and measuring 300 to 400 feet of timber.

Larch is not grown extensively in Denmark, as it is said to suffer badly from canker. Some fine mature larch stands in the Copenhagen forest district, and judging from the soil, it would appear to be a likely tree for producing a profitable crop. It is

planted sparingly in mixture with other trees, but not in sufficient quantities to affect the timber trade or supply of the country. The timber is valued at about 1s. per cubic foot.

Ash is seldom planted extensively, but confined to small groups and patches wherever soil and situation are suitable. The price obtained for this timber ranges from 1s. to 1s. 6d. per foot, and should be worth cultivating, as its growth is usually satisfactory when not crowded out by beech.

Experiments are being conducted in various parts of Denmark with Douglas fir, Sitka spruce, Japanese larch, black walnut, and other exotics. The two first-named are doing remarkably well in many places, but up to the present Danish foresters have not favoured the planting of such trees on a large scale. Walnuts, limes, etc., do well, but Spanish chestnut is seldom seen.

The cost of planting or sowing throughout Denmark appears to range from £2 10s. to £5 per acre, according to the nature of the soil and the preparation which it receives. Plants are raised very cheaply, and the commoner species are seldom valued at more than 6s. per thousand at three years of age, and in the case of natural regeneration the cost works out at very much less per thousand, although the difference per acre is not so great. Compared with the British Isles generally, Denmark is in an exceptionally favourable position for cheap planting, as fencing is seldom required, and rabbits are practically non-existent. Owing to the prevailing custom of tethering all domestic animals, even small plantations can be successfully reared in the centre of agricultural land, and this is doubtless responsible in a great measure for the rapid increase in the woodland area of Jutland, where small plantations, planted chiefly for shelter and ornament, are now such a feature in the landscape.

In all planting and sowing operations the preparation of the ground is very carefully attended to, and every effort made to secure a dense crop of seedlings on the ground at the outset. This is specially the case with natural regeneration, and on this account this process of re-stocking the ground often costs almost as much as ordinary planting.

The following statements regarding the costs of preparing the ground for natural regeneration were published in the "*Zeitschrift für Forst und Jagdwesen*" for February, 1908, and were

carefully worked out by Dr. Metzger, a German forest official making a special study of regeneration of beech in Denmark.

Example I., reduced to English measures, refers to fourteen acres of forest at Seesegaard, in Zealand, the expenditure on which amounted to—

I.

	£	s.	d.
Horse labour—38 $\frac{3}{4}$ days at 7s. per diem, .	13	11	3
Manual labour—36 days at 1s. 8d. per diem, .	3	0	0
Raking leaves, etc., from surface, .	4	12	0
Seed, 5 $\frac{3}{4}$ bushels at 3s. 6d., .	1	0	0
Sowing, 9 days at 1s. 8d., .	0	16	0
Purchase of chalk, 10 tons at 3s. 4d., .	1	13	4
Carriage of do., .	3	0	0
Spreading do., 11 $\frac{1}{4}$ days at 1s. 6d., .	0	16	10 $\frac{1}{2}$
Cleaning crop during three years, .	3	17	6
Filling up blanks, .	5	12	0
	<hr/>		
	£37	18	11 $\frac{1}{2}$

Average cost per acre, . £2 14 2 $\frac{1}{2}$

Example II. refers to the outlay per acre in the Boller district, East Jutland.

II.

	£	s.	d.
Removing weeds and rubbish,	0	6	0
Leaf-raking,	0	12	0
Ploughing,	0	19	0
Double harrowing,	0	6	8
Harrowing in seed,	0	3	4
Rolling and spreading leaves,	0	3	4
	<hr/>		
	£2	10	4
	<hr/>		

The above examples, which may be regarded as the outside cost of surface preparation, indicate a much higher outlay than is usually the case with natural regeneration, but the success which attends the method fully justifies the trouble and expense. It can of course only be carried out where stones and boulders are absent, and would not be possible in many parts of Ireland.

The cost of planting on the Jutland heaths when the ground is thoroughly ploughed is given as follows per acre:—

	£	s.	d.
1st year—Ploughing,	0	8	0
2nd year—Untouched,	—		
3rd year—Harrowing thrice,	0	5	0
4th year—Sub-soil ploughing,	1	10	0
Planting furrows,	0	3	6
5th year—2,800 spruce at 6s. per 1,000,	1	5	2
1,400 mountain pine at 6s. per 1,000,			
Planting, at 2s. per 1,000,	0	8	5
	£4	0	1

Pit planting on the heaths is carried out for about £3 15s. as follows:—

	£	s.	d.
Digging pits at 1s. per 100,	2	2	0
Plants at 6s. per 1,000,	1	5	2
Planting at 2s. per 1,000,	0	8	5
	£3	15	7

The cost of planting beech or oak in the older forests amounts to rather more than the above estimate, as a larger number of seedlings are used, and it may be put at an average of about £5 per acre.

In sowing beech or oak about 14 bushels of acorns or 8 bushels of beech nuts are generally used, and the cost is much the same as in natural regeneration, as follows:—

	Oak.			Beech.		
	£	s.	d.	£	s.	d.
Ploughing and grubbing furrows,	0	10	0	0	10	0
Seed at 4s. per bushel,	—			1	12	0
Seed at 2s. per bushel,	1	8	0	—		
Sowing,	0	5	0	0	5	0
Rolling, etc.,	0	3	4	0	3	4
	£2	6	4	£2	10	4

To this must be added the cost of keeping clean during two years, varying from 10s. to 15s. per acre, making a total cost of

about £3. Sown crops, however, are more easily kept clean and thinned out in after years than those raised from seed naturally, and as a rule produce a more regular crop.

Although a great deal of the more recent planting work in Denmark has not yet had time to give any return, the nett yield obtained from the older forests appears to be very satisfactory.

Financial Results. In the State forest service about £11,500 is annually paid out in salaries of higher officials and costs of administration, while about £5,500 is expended in experimental work of various kinds. The annual expenses and nett profits per acre in the year 1906-7 were as follows:—

	Expenses.		Nett Profit.	
	s.	d.	s.	d.
Older forest districts (wooded area only),	12	6	9	2½
Heath districts, „	6	7	2	8
All State forests, „	10	8	4	10

The total expenditure on State and communal forests in that year amounted to £60,280. The total income was:—Gross, £82,900, and nett, £22,620, while the average annual nett return during last ten years has been £19,000.

These nett returns are, however, much lower than they might be owing to the large annual outlay in extensions and improvements, and it is stated that the Danish Government practically devotes half the nett return it is entitled to receive to the purchase and planting of waste land.

In the larger private forests the nett returns from those under good management appear to range between 10s. and 20s. per acre, and it is interesting to note that although no restrictions whatever are placed upon the management of private woods by the State, yet they compare very favourably with the State forests both in administration and stock of timber, and very little over-cutting appears to be taking place.

From the above-stated facts it is evident that Denmark can compare very favourably as regards forestry

General Conclusions. development with any country in Europe.

Although possessing a more uniform soil and surface for the production of economic timber than Ireland, there is not sufficient difference between the existing physical and economic conditions in these two countries to account for the great disparity between their respective forest areas, and still less to

account for the great contrast between the well-stocked woods of Denmark and the attenuated areas which represent Irish woods. In common with most parts of Europe, however, forestry in Denmark is regarded as an industry rather than a hobby, and the existence of large individual forest areas of two to three thousand acres does much to simplify economy and good management. But the condition of numerous small woods in Denmark clearly proves that the principles on which they are managed are sound and economical, and that they owe more to the economical training and inclination of the owners, and the sympathetic attitude of the Danish Government towards forestry development in general than to any advantages of an incidental nature.

Many of the statistics and details regarding the condition and administration of the Danish State forests were kindly supplied by Mr. H. Mundt, of the State Forest Service.

A. C. FORBES.

TECHNICAL INSTRUCTION IN IRELAND.

[*.* *The following is the seventh of a short series of articles appearing in the JOURNAL on some recently established Technical Schools in Ireland. These descriptive articles relate to centres differing widely in population and needs, and it is believed that they will be of interest and value in view of future developments in towns in which permanent buildings have not yet been provided. Four of the articles dealt with the Belfast Technical Institute; the Technical School, Ballymoney; the Central Technical Institute, Waterford; and the Municipal Technical School, Dundalk.* Those buildings were new. Two of the articles dealt with buildings already erected but adapted to meet the needs of Technical Schools in Ballymena and Queenstown respectively,† and the article below relates to a similar building in Newry.*]

TECHNICAL INSTRUCTION IN NEWRY.

By E. HOLDEN,

Principal and Secretary, Municipal Technical School, Newry.

PART I.—EARLY HISTORY.

Unlike many towns in Ireland, Newry did not at once take advantage of the Agriculture and Technical Instruction (Ireland) Act, 1899, but allowed several of the authorities in the neighbourhood to get their schemes into operation before adopting a scheme of its own.

The first move in the Newry scheme is to be laid to the credit of the late Mr. Michael J. Magee, a member of the Agricultural Board of the Department up to the time of his death in the early part of 1902. Mr. Magee paid a visit to America, where he investigated the system of Technical Education, and created, on his return home, first, a strong and healthy feeling of inquiry as

* See issue of Department's *Journal* for April, 1907, Vol. VII., No. 3, p. 457; for July, 1907, Vol. VII., No. 4, p. 652; for October, 1907, Vol. VIII., No. 1, p. 11; and for July, 1908, Vol. VIII., No. 4, p. 666.

† See issue of Department's *Journal* for January, 1908, Vol. VIII., No. 2, p. 260 and for April, 1908, Vol. VIII., No. 3, p. 465.

MUNICIPAL TECHNICAL SCHOOL, NEWRY.

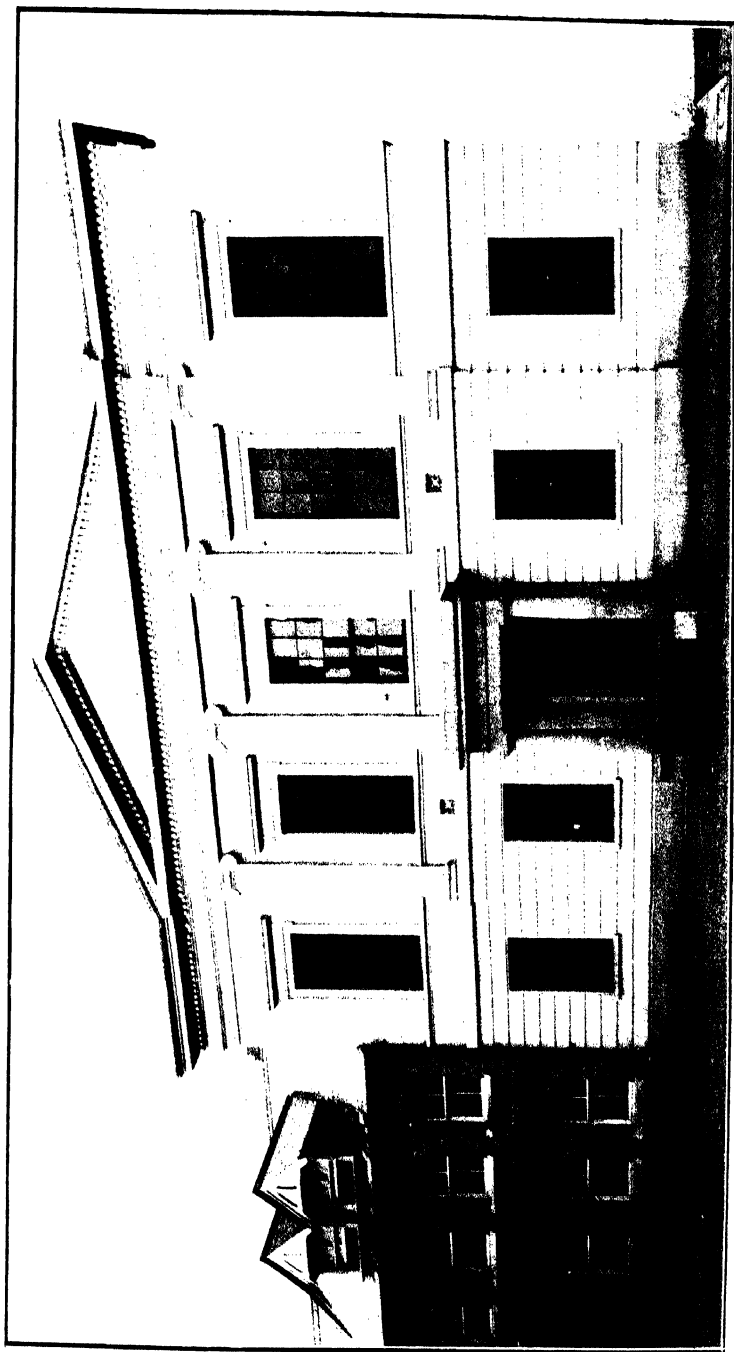


Fig. 1.—Front Elevation.

to what the Technical Education movement really meant, and then a firm conviction that the movement was one which would certainly improve the condition of the people in Newry.

During this period considerable assistance was given by the Department's Officers, and the outline of the scheme was drawn up.

PART II.—DEVELOPMENT OF THE LOCAL SCHEME.

General inquiries were made, and the progress of schemes in operation were noted by the persons who had become interested in the work, with the result that, on the 10th February, 1903, the Urban Council unanimously adopted the Technical Instruction Act, ordered the levying of a rate of 1*d.* in the pound under the provisions of the Act, and appointed a Committee, consisting of seven members of their own body, and nine Ratepayers outside the Council, to frame and put into operation a Technical Instruction scheme for the town. This Committee was constituted as follows, and met for the first on the 7th March, 1900:—

Urban Councillors.—Messrs. Henry Loughran, J.P.; Arthur M'Cann, J.P.; J. C. Nicholson, J.P.; J. J. M'Arevey, J.P.; John Treanor, W. T. Wheelan, and Hugh M'Caffery.

Co-opted Members.—Messrs. Henry Barcroft, D.L.; John Stokes, Charles O'Hagan, Thomas Irwin, S. Edgar Martin, M.A., M.D.; E. A. Geoghegan, R. A. Ridges, James Morgan, and J. H. Russell, Hon. Secretary.

In April, 1902, a series of Pioneer Lectures was arranged by the Committee, with the assistance of the Department's special lecturers. These lectures were well attended, and undoubtedly formed a splendid means of bringing the value of Technical Education before the notice of the merchant, the artisan, and the farmer.

The Urban District Council unanimously leased to the Committee, at a nominal rent, the premises now occupied as the School. The building was erected in 1838, and formerly served, for many years, as a Savings Bank and Public Hall. It is centrally situated, and was, with minor alterations and some additions, in every respect suitable for conversion into a Technical School.

It was next decided to appoint a Principal to carry out the instructions of the Council, and to organise and put the scheme into operation. Special qualifications in building trades' subjects were required in the person appointed.

The Principal, immediately after his appointment, which took place on the 17th October, 1902, undertook the preparation of the required plans and specifications for the alteration, addition, and subsequent furnishing and equipment of the premises. The Department placed the first annual contribution of £600 at the disposal of the Committee for building alterations, a sum which enabled the Committee to carry out their scheme and thus avoid the cost of an inquiry and a loan, with the subsequent drain upon the annual funds.

The alterations, additions, and equipment incurred an expenditure of over £1,300.

The School was formally opened by P. G. Hamilton Carvill, Esq., Member of Parliament for the Borough of Newry, on the 23rd of September, 1903.

On the occasion of the opening an important address was delivered by Sir Horace C. Plunkett, K.C.V.O., Vice-President of the Department of Agriculture and Technical Instruction for Ireland.

PART III.—GENERAL DESCRIPTION OF THE SCHOOL PREMISES.

The different rooms and their measurements are as follows:—

GROUND FLOOR.

Physics Laboratory.—18 ft. 10 ins. by 18 ft. 4 ins. by 12 ft. high.

Dark-room.—18 ft. 4 ins. by 8 ft. 3 ins. by 12 ft. high.

Corridor.—32 ft. 6 ins. by 9 ft. 3 ins. by 12 ft. high.

Principal's Office.—14 ft. by 13 ft. 4 ins. by 12 ft. high.

Reading-room.—18 ft. by 15 ft. by 12 ft. high.

Domestic Economy Room.—22 ft. 6 ins. by 20 ft. 6 ins. by 14 ft. high.

Manual Instruction Room.—36 ft. 6 ins. by 23 ft. by 10 ft. high.

FIRST FLOOR.

Assembly Hall.—49 ft. 4 ins. by 30 ft. by 21 ft. high.

Glass Room.—18 ft. by 14 ft. by 12 ft. 6 ins. high.

Cloak Room.—15 ft. by 12 ft. by 12 ft. 6 ins. high.

Art Room.—36 ft. 6 ins. by 23 ft. by 14 ft. high.

MUNICIPAL TECHNICAL SCHOOL, NEWRY.

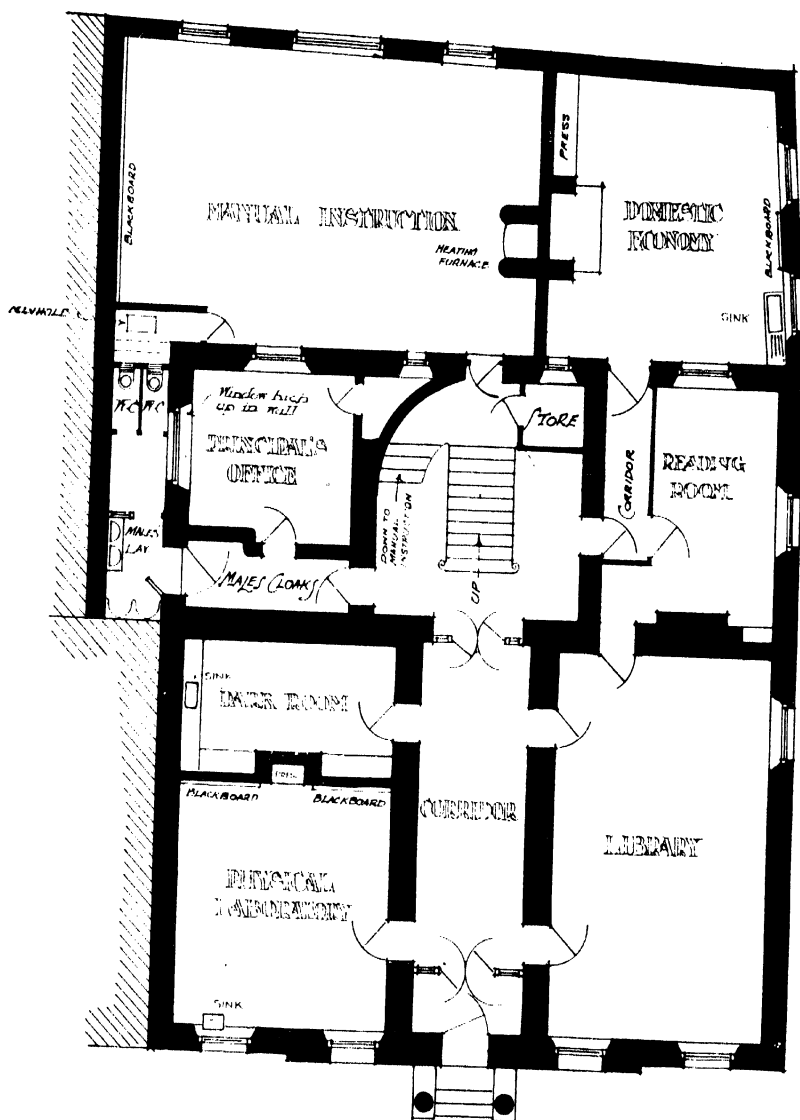


Fig. 2.—Ground Floor Plan.

MUNICIPAL TECHNICAL SCHOOL, NEWRY.

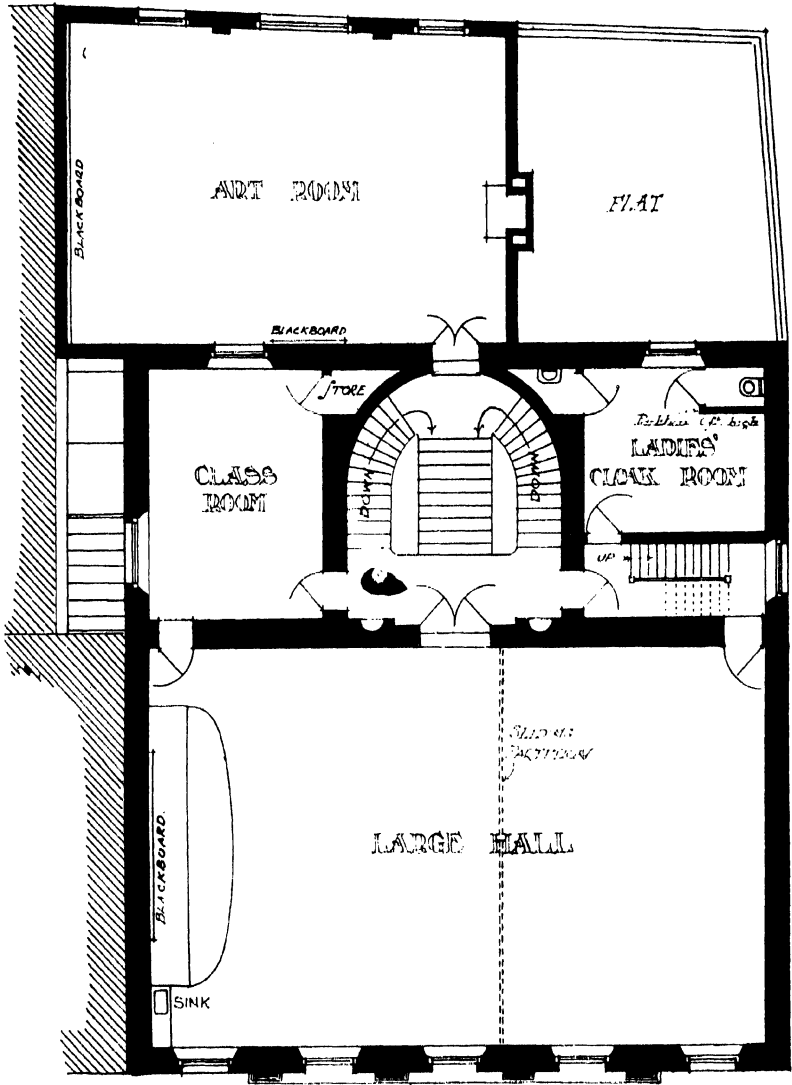


Fig. 3.—First Floor Plan.

SECOND FLOOR.

Chemical Laboratory.—34 ft. by 18 ft. 2 ins. by 12 ft. 6 ins. high.

Class Room.—14 ft. by 14 ft. by 9 ft. high.

Stairway.—15 ft. by 5 ft. 9 ins. by 21 ft. high.

Main Stairway.—18 ft. wide by 26 ft. high.

The entrance is provided with a Vestibule Screen, fitted with folding doors mounted on reversible hinges and filled with leaded lights covered with wire mesh protectors to guard against accidents. The rooms open off the hall to the right and left, and the main stairway occupies the centre floor space leading up to the Art Room, and on to the landing from which the large Lecture Hall and Class Rooms are approached. The building is lighted throughout by means of incandescent gas lights, and is heated by means of a low-pressure hot water system passing through two-column radiators, in all except the lecture hall, which being formerly heated by means of four rows of 3-inch pipes, was connected up to the new installation. Fireplaces are also in each room in case of necessity.

In decorating the school, green was chosen owing to its restfulness for the students' eyes. Contrast is obtained by tints and shades.

It may be interesting to point out that the original estimate for the building extension was £600, and when the whole of the tenders for the various trades were added together the total amounted to £600 15s.

The building extension and equipment was carried out in a most satisfactory manner by local firms.

The laboratory occupies a room on the ground floor, and is equipped with two benches giving accom-

**Physical and
Mechanical
Laboratory.**

modation to sixteen students. Experimental apparatus of the usual type for Physical, Electrical and Mechanical experiments are fixed to the wall, suspended from the ceiling, or stored in the bench drawers, or in a glazed press fitted in a recess. About 56 square feet of blackboard surface is provided in the form of fixed or balanced boards. Water supply is laid on to a sink, and gas supply—16 places—on to the benches.

As the room is used for Engineering and Building trades' classes it is well furnished with models and examples for these two trades.

Adjoining the laboratory is a Dark Room, fitted up with requisites for photographic work, and for experimental work where only artificial light is required.

The Domestic Economy Room is situated in the new extension, and is fitted with working places for sixteen students. The cooking is performed on a large gas cooker fitted with side-boiler, and provided with hood and ventilating flue; or by means of a coal-fire combination range fitted with two ovens, one oven above the fire level and the other below. A copper back boiler supplies hot water to the sink through a 30 gallon copper cylinder. As much as possible of the system is open to view for inspection and class demonstration. At one end of the room a platform is arranged to enable one row of students to see over the heads of those in front, when demonstrations are being given by the teacher. Owing to the limited space available special note-taking chairs, costing 5s. 6d. each, are used in place of fixed desks. Store presses and shelving are fitted in recesses, and a large porcelain-enamelled sink fitted with hot and cold water supply is provided. A blackboard—6 ft. by 6 ft.—balanced, is fixed on one side, and Domestic Science charts are suspended from a picture rail. The equipment of the room also includes 16 papier-maché basins, and one rubber roller wringer for laundry purposes.

The Manual Instruction room is provided with twenty single wood-working benches, with the usual tools stored in lockers and drawers. The benches are fitted with a 7-inch "Perfection" side vice, with the jaws protected, and a wooden tail vice, with iron screw. The cost of the benches was £2 5s. each. The usual tool racks and presses are also provided, as well as about 60 square feet of blackboard space made from a class of oil-cloth known as "green baize." The cloth is secured to the wall direct with strong paste, and a moulding is fixed along the top and bottom edges.

In this room is placed the boiler which supplies the hot water to heat the whole building. It occupies a space of about 3 ft. by 3 ft., and is fired by means of coke, using in mid-winter about 2½ to 3 bushels per day, to maintain a temperature of about 60 degrees F. throughout the building.

MUNICIPAL TECHNICAL SCHOOL, NEWRY.

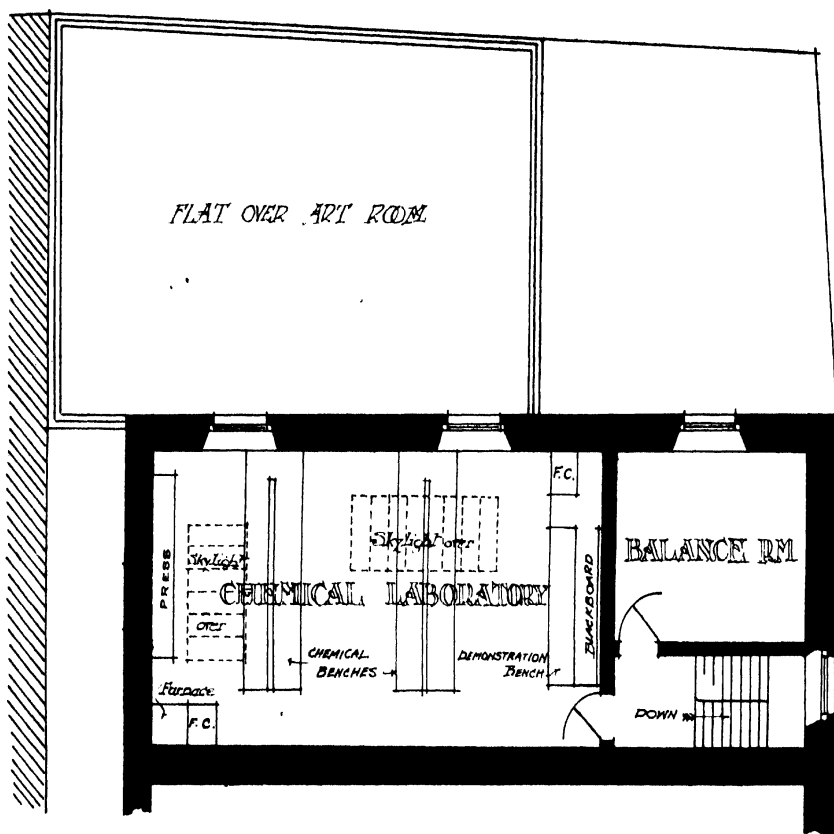


Fig. 4.---Second Floor Plan.



Fig. 5.—Domestic Economy Room.

The Dressmaking Class is accommodated in this room by placing large plywood boards for drafting purposes across the benches. For this class are also provided dress stands and a sewing machine.

The Principal's Office is on the ground floor, close to the men's cloak-room. This is an advantage in the respect that good order prevails when students are leaving their classes. The room is equipped with roll-top desk, book-case, and press for school supplies—which are retailed at cost price—table and two typewriters—used for practice—and the usual office equipment.

The Art Room opens off the first landing, and gives accommodation for about fifty students in Freehand or Model drawing. It is well lighted in the daytime with windows having a northern aspect. The windows are fitted with opaque blinds, some of which are adjustable from both top and bottom for the purpose of regulating the light. In the evening the room is lighted by a self-intensifying incandescent 500 c.p. gas light. The furniture of the room consists of trestles and stools, donkey easels with sliding seats, and the usual drawing appliances. About 108 super feet of blackboard surface is provided and additional easels can be set up, so that accommodation is given to about fifteen students for blackboard drawing.

Examples of students' work are exhibited on the walls by means of frames of a standard size carried between mouldings arranged at distances to suit either height or breadth measurements. The room is adequately equipped with casts, models, and drawing examples, and a desk is provided for the teacher's private use.

A small room is set apart for clay modelling.

The Assembly Hall is a large room used for the accommodation of the Introductory and Commercial classes, and for special lectures, examinations, etc. When the room is cleared of desks, there is seating accommodation for about 350 people. The room, when divided for class purposes, makes two good class rooms and is equipped with pitch-pine desks having tops 20 inches wide and 6 feet long, thus allowing good working space for the student. According to the class of work going on, two or three chairs may be placed at one desk. A lecture table 20 feet long and 4 feet wide is fixed at one end of the room, and is fitted with gas equipment for experimental work and lockers for the use of teachers.

In the corner of the room, close to the lecture table, is fitted a small bench with sink and water supply. To the left of the lecture table a portion of the wall is painted flat white to act as a lantern screen. A large press which serves as a museum is placed in the room, and maps and diagrams of a commercial character adorn the walls.

At the end of the ordinary session, special cookery classes for mill-girls are held in this room over a

Classes for Mill Workers.

period of about six weeks. For this purpose two large open fireplaces have been built, and all the cooking operations are performed in the manner common to the poorer houses in the town, from which the pupils are drawn, viz., by means of griddle plates and pot ovens, etc. These classes have been arranged successfully for the past four years. The students pay one penny per lesson, the materials are found, and the cooked food is distributed to them. At this stage it may be mentioned that a local firm of millers provide all the flour used in the school free of charge, merely asking that a statement be made to the effect that flour of Irish manufacture is being used.

The class rooms on the first and second floors are equipped with

Class Rooms.

dual desks provided with wide tops—cost, 17s. each—extensive blackboard surface, teacher's desk, and store presses.

The chemical laboratory is situated on the top floor, thus relieving the other parts of the building from the objectionable odours usually pervading the atmosphere when the laboratory is on the lower floor. Working accommodation is provided for sixteen students, with the usual drawer and locker, and gas and water arrangements. Lecture table, fume chambers, furnace bench, and presses are fitted in convenient positions. Owing to the limited space, note-taking chairs are used instead of desks. The waste pipes from the benches are of salt-glazed earthenware, easily accessible for inspection and cleansing.

Cloak room accommodation is provided for ladies on the first floor, and for men on the ground floor.

Cloak Rooms.

Lavatory and sanitary arrangements are close to the cloak rooms.

Stores for coal and coke and caretaker's requisites are

Stores.

arranged under the stairs.

MUNICIPAL TECHNICAL SCHOOL. NEWRY.



Fig. 6.—Manual Instruction Room.

MUNICIPAL TECHNICAL SCHOOL, NEWRY.

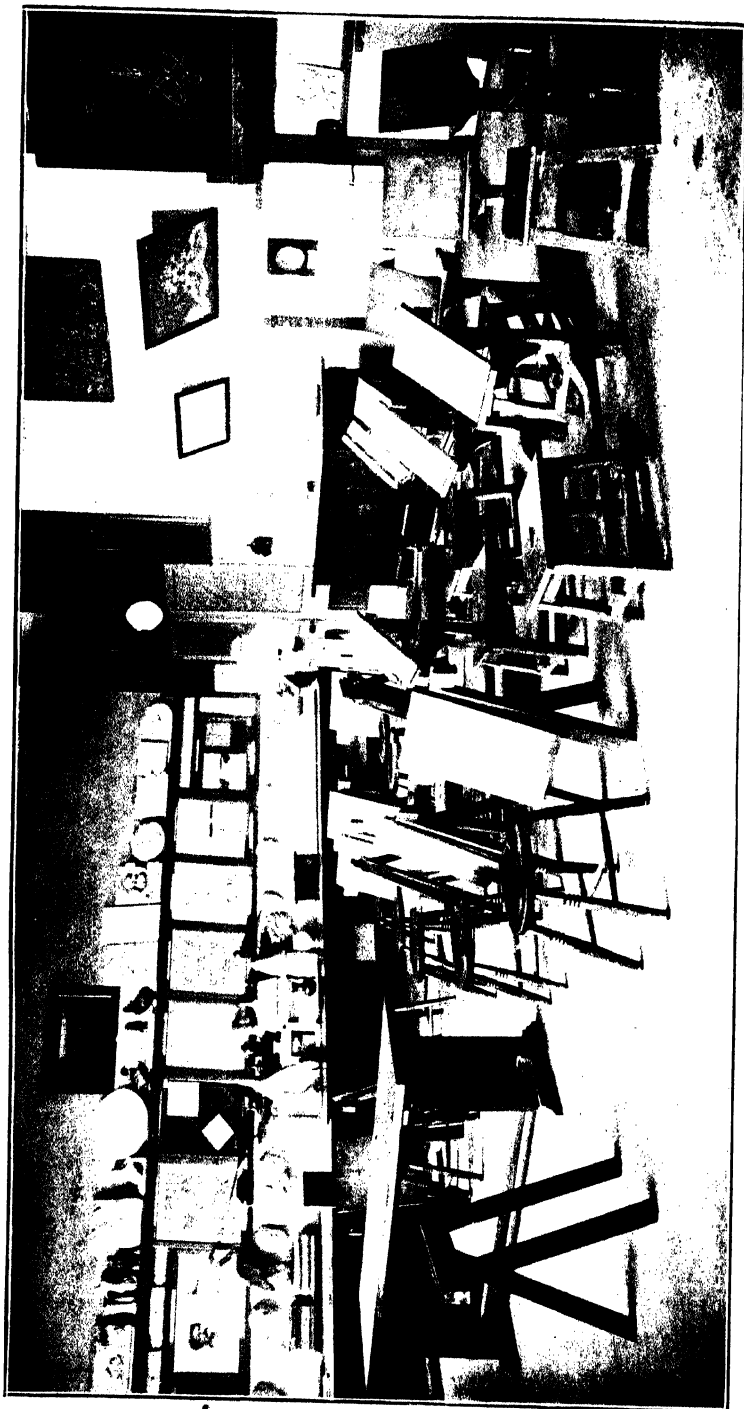


Fig. 7.—Art Room.

PART IV.—SCHEME OF INSTRUCTION.

The town of Newry is situated at the head of Carlingford

Newry and its Industries.

Lough, with which direct shipping is conducted through a ship canal about four miles in length. The port of Newry occupies a high position amongst Irish ports. It is the chief distributing and collecting centre for Mid-Ulster. Direct sailings are conducted to all parts of the world, but to the West Indies, North America and the Baltic in particular. Home ports and cross-Channel sailings are frequent, especially to Liverpool and Ardrossan. A fleet of about thirty steamers, with an average carrying capacity of about 600 tons, is locally owned. Coal, grain, timber, cement and slates are distributed through the port *via* the Great Northern Railway or *via* the canal leading through Lough Neagh. Additional impetus to the further development of the port and town will be afforded when the Newry, Keady and Tynan Railway, now under construction, is completed. The offices and works of the company will be situated in Newry.

Although not strictly a manufacturing place, there are a few industries, which form a good nucleus for further development in the direction of engineering or general manufacturing, and in designing the scheme of Technical Instruction it was decided to give special attention to the training of young commercial and industrial workers, and to provide specialised instruction in certain branches of commerce, administrative and applied science to fit students for the higher positions of foremen, managers, and employers.

The curriculum is a wide one for a town such as Newry, and its value is being felt owing to the fact that co-ordinated courses are generally adopted by the real student. It is hoped eventually to develop the work so as to fit the advanced student to be handed over to some institution of University standing where Technical Courses are specialised in.

TECHNICAL INSTRUCTION SCHEME.

1st August, 1908, to 31st July, 1909.

Chief Industries, Granite Quarrying and Cutting. Textiles (Spinning and Weaving). Milling (Corn and Flour). Brickmaking, Building, Engineering, Tanning, Soap Manufacture, Mineral Water Manufacture, Brush and Basket Making, Floriculture and Horticulture. The town is also an important Commercial, Shipping and Trading centre.

Population, 18,623. Valuation, £24,788 18s. Value of 1d. rate, £125.

OBJECT OF THE SCHEME.

The object of the Scheme is to provide, by means of Evening Classes, instruction in Science, Art, Technological, Domestic Economy, and Commercial Subjects for persons engaged in various industries during the day.

SUBJECTS OF INSTRUCTION.

Introductory Technical Classes.

Commercial English and Arithmetic, Drawing, and Science.

Commercial Subjects and Languages.

Shorthand, Book-keeping, Commercial Practice and Business Methods, Commercial English and Arithmetic, Typewriting, Banking and Currency, Economics of Industry and Commerce, Commercial Law, Theory and Practice of Commerce, Political Economy, Commercial History and Geography, English, Irish, French and German.

Science Subjects.

Practical Plane and Solid Geometry, Machine Construction, Building Construction, Mathematics, Practical Mathematics, Applied Mechanics, Magnetism and Electricity, Theoretical Mechanics, Chemistry (X and Xp.), Steam, Physiography, and Hygiene.

Technology.

Carpentry and Joinery, Manual Instruction in Woodwork, Masonry, Brickwork, Applied Arithmetic, and Tailor's work.

Domestic Subjects.

Cookery, Laundry Work, Dressmaking, Household Management, Ambulance and Sick Nursing.

Art Subjects.

Freehand Drawing, Model Drawing, Drawing in Light and Shade, Blackboard Drawing, Design and Principles of Ornament, Geometrical Drawing, Modelling, Perspective, Antique, Painting from Still Life, Art Crafts Class.

The classes in the school may be divided into four groups:—

1. *Commercial Subjects.*—These subjects are for the purpose of assisting those engaged in clerical pursuits, and fitting youths for a business career.
2. *Technical Subjects.*—Most of the subjects bear directly upon the trades and industries of the district. The scientific principles upon which the industrial processes depend are fully explained and demonstrated, practical training being provided in some branches.

MUNICIPAL TECHNICAL SCHOOL, NEWRY.

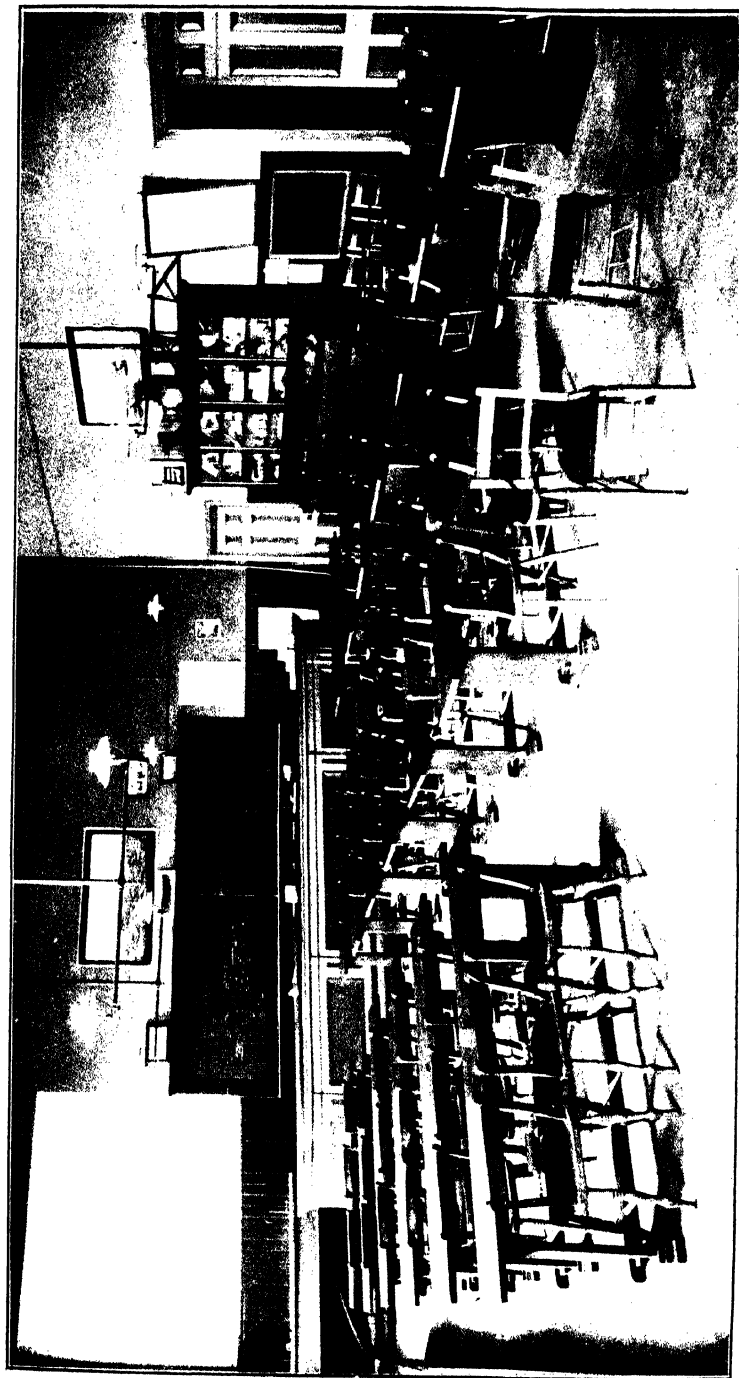


Fig. 8.—Assembly Hall.

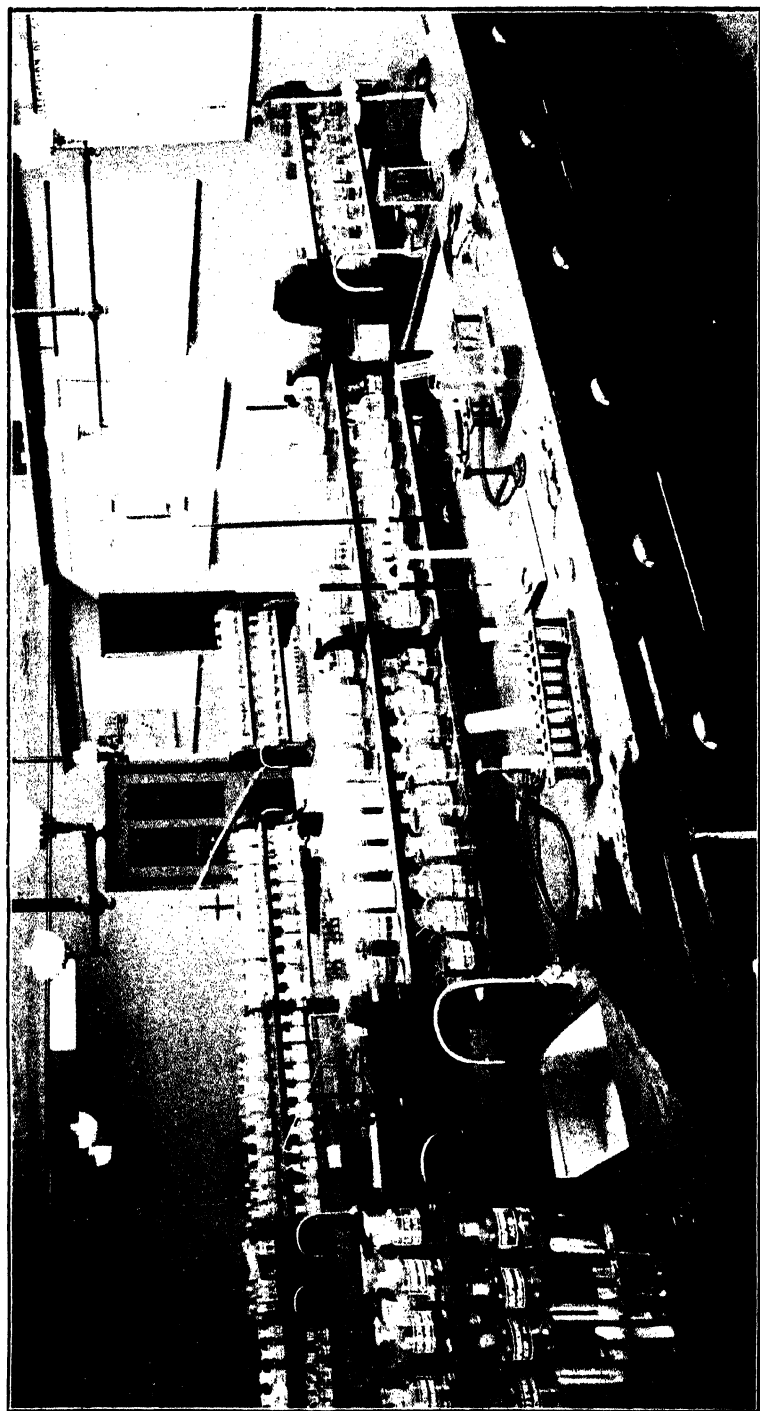


Fig. 9.—Chemical Laboratory.

3. *Science and Art Subjects*.—The courses generally follow the Syllabus of the Board of Education, with special application to the industrial development of the town.

Students who desire to prepare for an industrial pursuit take up these courses.

4. *Domestic Subjects*.—Ladies seeking a fuller knowledge of household matters, and artisans' wives and daughters wishing to improve their knowledge of domestic subjects, or desirous of learning what concerns their bodily health, derive assistance from this section.

PART V.—FINANCE.

Estimated Income and Expenditure, 1908-09.

A. *Income.*

	£	s.	d.
Local contribution from Urban District Council,			
<i>Id.</i> Rate,	125	0	0
Private subscriptions to Prize Fund,	20	0	0
Students' Fees,	70	0	0
From Department:—			
(1.) Endowment,	600	0	0
(2.) Attendance Grants,	200	0	0
Grant earned by Intermediate School Pupils,	70	0	0
	£1,085	0	0

B.—*Expenditure.*

	£	s.	d.
Salary of Principal and Secretary,	250	0	0
Salaries of other Teachers,	555	0	0
Prizes,	20	0	0
Salaries of other Clerical Staff,	20	0	0
Wages of Caretaker, at 18s. per week,	47	0	0
Fuel, Light, and Cleaning,	45	0	0
Rents and Insurance,	8	0	0
Class Materials and Equipment,	50	0	0
Printing, Stationery, and Advertising,	40	0	0
Administrative and Incidental Expenses,	50	0	0
	£1,085	0	0

PART VI.—CLASS RETURNS, 1907-08.

Subjects of Instruction.	No. of Students enrolled in each Class.	Attendance- hours.
PREPARATORY :—		
English,	132	1,826
Mathematics,	132	1,854
Drawing,	74	2,214
Science,	27	477
Manual Instruction,	5	126
COMMERCIAL :—		
Book-keeping,	85	2,476
Shorthand,	114	4,114
Typewriting,	34	450
Business Routine,	40	495
LANGUAGES :—		
French,	31	622
Irish,	18	464
HIGHER COMMERCIAL SUBJECTS :—		
Commercial Geography,	36	451
Commercial Law,	21	504
Economics,	6	83
MATHEMATICS :—		
Practical Plane and Solid Geometry,	7	139½
Mathematics (Pure),	15	141
Mathematics (Practical),	7	126
SCIENCE :—		
Building Construction,	6	217½
Machine Construction,	8	126
Theoretical Mechanics,	9	133
Magnetism and Electricity,	4	11
Chemistry,	12	416
ART :—		
Geometrical Drawing,	15	196
Art (Evening),	27	3,449
Art (Day),	4	220
DOMESTIC :—		
Cookery (Special),	19	159
Cookery,	117	2,874
Laundry,	17	262
Dressmaking,	28	760
Household Management,	17	235
TEACHERS' CLASSES :—		
Elementary Experimental Science,	35	3,787
Totals,	1,102	29,358

ATTENDANCE RECORD.

YEAR.	No. Enrolled.	Class Entries.	Total Attendance Hours.
1903-04, ...	439	1,037	20,204
1904-05, ...	396	939	19,774½
1905-06, ...	377	994	20,512
1906-07, ...	340	1,014	20,423½
1907-08, ...	407	1,123	29,358

OCCUPATIONS OF STUDENTS—1907-08.

Young Men.

Persons engaged in Farming Occupations,	3
Building Trades—including Workers in Wood, etc.,	7
Coach and Car Builders,	—
Engineers, Workers in Metal, Draughtsmen, etc.,	9
Architects, Surveyors, Civil Engineers, etc.,	3
Electrical Engineers, Scientific Instrument Makers, etc.,	—
Printing Trades—Compositors, Lithographers, etc.,	10
Textile Industries—Designers, Weavers, etc.,	5
Painters and Decorators,	—
Plumbers, Gasfitters, etc.,	—
Trades involving Applied Art—Jewellers, Furniture Makers, etc.,	—
Chemists, Analysts, Druggists, etc.,	4
Salesmen, Shopkeepers, Warehousemen, etc.,	39
Clerks in Commercial Offices,	24
Clerks in Banks, Civil Service, Law, Assurance, and Accountants' Offices,	—
Teachers, Assistant Teachers, Pupil Teachers,	26
Students (University, Law, Medical),	1
Occupations not included in the above Classes,	10
Boys just left School or College,	1
Boys still in attendance at School or College,	20
No occupation stated,	10
Total number of Young Men,	172

Young Women.

Persons engaged in Farming Occupations,	—
Domestic Servants,	11
Printing Trades,	—
Dressmakers, Milliners, etc.,	9
Textile Industries—Designers, Weavers, etc.,	20
Factory Workers not included in above,	1
Workers in Lace, Crochet, Embroidery, Sprigging, Drawn Thread Work, etc.,	1
Saleswomen, Shopkeepers, etc.,	17
Clerks, Cashiers, Civil Servants, etc.,	24
Teachers, Assistant Teachers, Pupil Teachers,	38
Students (University, Medical,	—
Occupations not included in above Classes,	65
Girls just left School or College,	—
Girls still in attendance at School or College,	38
No occupation stated,	11

Total number of Young Women, 235

Total number of Students, 407

PART VII.—STAFF OF THE SCHOOL.

The teaching staff of the School consists of whole-time officers and sessional teachers:—

1. The Principal acts as Secretary to the Committee, and is responsible for the organisation of the Scheme and management of the School. He also teaches the Building Trades' subjects, and other Science and Commercial subjects and Manual Instruction.

2. Science and Engineering Instructor—with degrees and diplomas B.Sc. (Pure Science), B.Sc. (Engineering); A.R.S.M., F.C.S., etc., etc., in charge of Engineering, Chemistry, Mathematics, and Teachers' and Preparatory Science Classes.

3. Art Teacher—Art Master's Certificate—in charge of Day and Evening Art Classes.

4. Domestic Economy Instructress, 1st class diploma, in charge of Day and Evening Domestic Science Classes.

5. Commercial Instructor—Bachelor of Commerce—teaching Higher Commercial subjects, as Economics, Commercial Law, History and Geography, Banking and Accounting, etc. (This is a joint appointment, Newry taking three-fifths of the teacher's time.)

Sessional Teachers in:—Book-keeping, Shorthand, Dressmaking, English, Mathematics, French, Irish; with two Art Pupil teachers, and caretaker.

It may be noted that some of the sessional teachers have gained their qualifying certificate after study at the school, and are consequently a source of great strength to the school.

PART VIII.—METHODS AND RESULTS.

Without paying an undue importance to examinations, students are recommended to sit for examinations, and these are arranged under the auspices of the following Examining Boards:—Department of Agriculture and Technical Instruction for Ireland, Board of Education, City and Guilds of London Institute, Royal Society of Arts, National Union of Teachers, London Chamber of Commerce, Incorporated Phonographic Society.

An average of 120 certificates have been gained during the past four years.

These certificates have been supplemented by medals and prizes presented by local gentlemen and the Committee, and the following scholarships have been awarded by the Department of Agriculture and Technical Instruction:—

Two Industrial Scholarships for Damask Manufacture and Design.

One Art Teachership-in-Training.

One Manual Training Scholarship.

Various competitions have been arranged for Art Students to supply designs to local traders, in one case a design was required for a flour bag, in another for a butter box, and the successful designs have been well paid for and registered, and are now in use. Designs by the students are frequently reproduced in connection with the School's publications.

In addition to the ordinary work of the Technical School, the premises serve as a centre of instruction for two of the Secondary Schools in the town, the students of which attend for instruction in the subjects of the Department's Secondary School Programme. The teaching is given by the Technical School staff.

It will be noticed that the programme drawn up by the Technical Instruction Committee includes a great variety of subjects, and it is pleasant to record that the scheme is working smoothly and in harmony with established institutions, and at the same time is receiving the sympathetic support of the traders and employers of the

**Help from Employers
and Workers.**

town as well as of the various trade societies. Many of the employers in the town have agreed that satisfactory attendance at the school and success at the terminal examination shall carry a rise in salary.

The following clause has been inserted in the working rules of the Newry Branch of the Painters and Decorators' Society:—

“ Every apprentice to the trade shall become a student of the Municipal Technical School, and if he shows efficiency his wages shall be increased in addition to the ordinary annual increase.”

Further, during the past three years employers have made frequent applications for suitable young people, and in this way many former students have obtained good positions. It has been previously stated that some members of the teaching staff have gained their qualifications after attendance at the classes, and it may be added that quite a number of old students are now acting as teachers of special subjects both in the vicinity of Newry and in other parts of the country.

The students of the Commercial classes have inaugurated a Shorthand Writers' Association, with a full complement of officers, the Principal of the School being President this year, and meet in a room, set apart for their use the whole year round, for speed practice, lectures on phonographic and kindred subjects, competitions, etc. The association is doing an excellent work in keeping the past and present students together.

The Newry Engineering Association also co-operate with the school by the reading of papers, lectures, etc., and by holding meetings on the premises. One of the conditions of membership for Juniors is attendance at Technical Classes.

The Newry Chamber of Commerce keeps in touch with industrial matters, and the Technical Instruction Committee have allowed and encouraged their officers to render expert assistance and advice. It may be mentioned here that a new industry has recently been started in the town and promises to be a splendid success. The company was the outcome of a meeting of prominent business men in the town, brought together in the Technical School, and at the present time the Principal is acting as hon. sec. to the concern.

In conclusion it can be stated without hesitation that the scheme is now well established and that the school and its work are accepted as real parts of the life and welfare of the town and as the bond between the school and the leaders of industry becomes closer the efficiency and further development of the scheme will enable the Committee of Management to look out upon the future with optimism, and to feel with satisfaction that in their day and time was added to the Institutions of the " City of the Yews " a means of advancement which tends to the material welfare and industrial development of the town and district.

BARLEY GROWING AND SELECTION IN IRELAND.

During the past few years efforts have been made by the Department of Agriculture to improve the general cultivation of barley in Ireland, and extensive variety tests have been carried out in all the barley-growing districts with a view to ascertaining the most suitable variety or varieties for different localities.

Chevallier and Standwell were the varieties most commonly in use in Ireland at the time these investigations were commenced in 1901, the former being grown on the lighter class of limestone soils and the latter on deeper and stronger loams.

The Archer variety was then to some extent cultivated on the eastern portion of county Cork, while Goldthorpe found a very small patronage in any part of the country.

The four varieties just mentioned formed the basis of experiment, and when in due course it was found possible to omit any one member of the group it was replaced by another local or otherwise prominent variety, and in this way no less than seven of the most generally appreciated varieties have been thoroughly tested.

In a very short time Archer demonstrated, and has since maintained, its superiority in yield on the generality of barley soils. On heavier soils, however, and in wet seasons, Goldthorpe proved its equal at some centres, and its superior at others. Standwell, during the whole period of experiment, fell considerably below both Archer and Goldthorpe in yield, while Chevallier, the usual type of barley then in general use, showed a decided inferiority to either of the two types.

Through the active co-operation of Messrs. A. Guinness, Son, and Co., Ltd., in this work the qualitative values of the produce of the respective plots were ascertained by malting tests, and the field results can be compared concurrently with actual malting trials.

Both Standwell and Goldthorpe proved to be slightly better malting material than Archer, while this variety and Chevallier were about the equal in value.

Archers has, in addition to its high productivity, some points of very practical value which cannot be overlooked. It is stiff and short-strawed, and, unlike any other type, possesses an extremely short neck, the upper sheathing leaf extending to the base of the ear, thus forming an additional security against the ear breaking off at the neck—a defect of regrettable frequency amongst many both broad and narrow-eared varieties. A disadvantage of somewhat serious proportions, especially in seasons of limited sunshine, is its late ripening habit.

The natural varieties most extensively in use in Ireland belong to the two sub-species, *Hordeum zeocriton* and *Hordeum distichum*. Both these sub-species are two-rowed types with two rows of infertile lateral spikelets on each side of the ear. The varieties belonging to the sub-species *Hordeum zeocriton* are broad and dense, the latter factor varying with the angle that the grains make with the rachis, and of this class Goldthorpe, with its parallel arrangement of grains, is our best known present day type.

To the second sub-species belong the narrow-eared, laxer-eared types such as Chevallier. The general names broad and narrow used to distinguish the two principal types need no further explanation, but there are in addition to these variations some further botanical differences, which, for purposes of identification and isolation may be noted. Firstly, the rachilla or basal bristle lying in the vertical groove of the grain in true Goldthorpe is short and covered with long fine hairs, and the glumes and rachis are likewise pubescent. The rachilla of Chevallier is long and covered with extremely short and fine hairs, and the glumes and rachillae are almost glabrous. A basal furrow or notch on the dorsal side of the Goldthorpe is characteristic of the variety, and is entirely absent from Chevallier and other narrow-eared types. These differences in characteristics are purely varietal, and, in conjunction with several minor details, they assist in the identification of the two types mentioned. But there are, it must be remembered, some broad-eared barleys with smooth rachillae, and some narrow-eared with rough rachillae. For instance, Archer

barley, a narrow-eared type, intermediate in laxity between Goldthorpe and Chevallier, has a rough rachillae and pubescent glumes, etc. The same is true also of some varieties of old Irish, which will be dealt with later.

A characteristic which is of a constitutional rather than a botanical nature is the length of period of growth from the time the seed is sown until its produce is fully ripe. This varies now only as between different varieties, but to a smaller extent between different lines of the same variety.

The following figures taken from a report on the Experimental Barley Plots of 1904 will indicate the degree of difference between the three common types, Archer, Goldthorpe, Chevallier. Thus Archer and Goldthorpe sown side by side, at ten centres, in that year, occupied 156 and 150 days respectively from the time of sowing until harvesting, while Chevallier grown at six centres concurrently with these two varieties occupied 148 days.

In the early stages of the field investigation it was noticed that the Experimental Plots, even after the exercise of the greatest care in growing and keeping the seed pure, did not in harvest time assume a sufficiently even appearance. Mixtures of broad in narrow-eared plots and *vice versa* were readily observable, but only occurred to a small extent, and may be accounted for by accidental admixture in sowing and threshing machines. Allowing that such mixtures are caused in the manner stated, and that the degree of mixture depends on the care exercised in dealing with the produce when once harvested, it was observed more particularly in the Chevallier and Archer plots that some ears ripened considerably earlier or later than the greater part of the crop.

The effect of mixtures varying in this manner is distinctly detrimental to the appearance, and more especially to the quality of the resulting produce. Ears harvested before they are fully ripe have not completed their starch elaboration, and consequently do not undergo the beneficial maturation which succeeds the completion of the vital processes.

Coarse, steely, grains are the result of premature harvesting, and these malt very slowly and indifferently. In a mixture with more perfectly matured grains they undergo the necessary conversion from starch into sugar incompletely, and consequently

the malting product is a less valuable one, in point of extract, than would be obtained from homogeneous material. Again, the effect of mixtures on the yield of this crop is adverse. The seeds of late ripening varieties are, as a rule, slower in germination than earlier types, and consequently the competition for root space and afterwards for light is increased for the late varieties. Indeed the length of the germinating period may be taken as a true index of the earliness or lateness of a variety. This competition limits the energies of late-ripening individuals, and finally their produce. A mixture of any early types in a late-ripening population results in a loss, owing to the ears becoming over-ripe, breaking off the straw, and falling to the ground.

Additional interest was lent to these observations in 1905, when some small quantities of Prentice barley were imported from Denmark, and sown in County Cork. The produce of these displayed a remarkable degree of purity in type, and were, in addition, of slightly higher quality than ordinary Archer barley.

Further inquiries have shown that Prentice barley is a selected strain of Archer, a small quantity of seed of which was imported from the east of England some years ago into Denmark, where it has been subjected to a process of botanical selection.

In 1906 more extended trials of Prentice at twelve centres in different districts demonstrated its superiority in yield to Archer to be 12 stones per statute acre.

The experiments conducted both in the field and in the malt-house have shown that even small botanical differences co-exist with distinct quantitative and qualitative characters, and that the limitation of the number of varieties of barley in use is, therefore, if possible, extremely desirable from a commercial point of view. This aspect of the question has been kept closely in mind. The relative value of variety experiments then becomes of increased importance, and one error of experiment, at least, which must and can to a great extent be controlled, is the purity of the seed used in field trials. Definite and comparable quantitative results cannot be obtained if the quantity of impurity is a fluctuating one, as conditions of soil, and especially of manuring, considerably affect the proportion of the mixture, so that crops grown on dissimilar soil from the produce of the same seed are entirely different from a botanical point of view.

In 1904, in order to provide an immediate supply of pure seed for future experimental work, a large number of ears of the respective varieties then under consideration were collected from different experimental plots in the country, and the bulk of seed obtained by threshing out these was cultivated in a special manner in 1905. Each ear was chosen as being a true representative of its respective variety, and not only the form of the ear, but such characteristic differences as the rachillae offer, were used in determining the grains to be reserved for future propagation.

It must be acknowledged—indeed it was shown by results—that the system of selection is not one to be recommended, and necessity, rather than scientific principles, is accountable for its adoption. It finds, however, a classical parallel in Rimpau's method of improving rye, and partial as it must be regarded, trials in 1907 proved the enhanced value of the produce to be 8 stones per statute acre.

This experimenter in an exactly similar manner collected a number of the best heads of rye from his fields, and sowed the bulk of seed obtained from such together in one plot, and collected from the produce of successive years those heads which he regarded as the most closely approaching the type he had in view, and again propagated the resulting produce. Thus, in time the desired type became predominant in the population, and a pure line was established.

During the ripening of the produce of the selected plots of seed, however, there was still a very apparent unevenness unaccountable for at that time, but the cause of which has since been demonstrated by further experiments. Whilst selecting the ears of the Chevallier, Old Irish, and Archer a few ears were met with which were observed to differ from the accepted type in one or more minor points. To test the persistency of such features single ears from consecutive generations have been sown in a nursery during the past three years.

The Old Irish—a barley belonging to the narrow-eared class—was a particularly uneven ripener. The variety appears to be indigenous to Ireland, and is to this day still grown in a few districts. On account of the small amount of selection to

which it has been subjected in the past, it forms a splendid example of the variation which is to be found amongst plants of the same variety. It differs from Chevallier forms—such as Hallett's Pedigree—in the thinness of its grains, the pigmentation of the veins of each corn which persists when the corn is fully ripe, and the existence of a like colouring matter in the straw which is of a thin reedy nature.

The rachilla is long, and covered with long hairs in some forms, and similarly long, with short hairs in others. On growing ears representative of the various types of this variety the cause of the discrepancy in the date of ripening was immediately evident, the produce of some ears being seven to ten days later than others, while the whole were fully fourteen days earlier than ordinary Chevallier. In addition, a very distinct difference in the density of the ears of some of the types was observable.

So marked was the visible variation in this character that measurements of absolutely ripe ears taken from the produce of several of the ears have been made during the three years the experiment has been in progress. Referring to four ears of this barley bearing the rough rachilla, named, for convenience, B, C, D, E, the average density of the ears in three consecutive years has been as follows:—

B,	. . . . .	·162	Inches.
C,	. . . . .	·163	„
D,	. . . . .	·152	„
E,	. . . . .	·159	„

While that of six ears with smooth rachillae, A, B, C, D, F, X, for the same period has been:—

A,	. . . . .	·159	Inches.
B,	. . . . .	·155	„
C,	. . . . .	·154	„
D,	. . . . .	·148	„
E,	. . . . .	·137	„
X,	. . . . .	·147	„

Ears of Archer and Chevallier, taken from different experimental field plots and grown as single ear cultures for the past three years, showed also minor constant differences in their botanical and constitutional characters.

The exact proportion of the different types to be found amongst our corn crops from year to year cannot be considered to be a constant figure. Under varying conditions of soil and climate they must themselves vary in relative productivity

according to the suitability of the various types to the prevailing soil and cultural conditions. Thus, the type of Old Irish most commonly found in cultivation in this country is the very lax ear with rough rachillae.

A close study and individual cultivation of single ears leads to the conclusion that our existing cultivated varieties of barley consist of a large number of what may be termed sub-varieties, or, as Professor De Vries has called them, "Elementary species." There is no reason to believe that the few forms that have been isolated, and here described, include all that may be found in the produce of any individual bulk of seed. It is quite probable that a more exhaustive search would reveal a largely-increased number of forms. Professor Nilsson, of Svalof, working along this line of investigation, has succeeded in isolating at least a hundred strains in each of the older species of cereals.

The evidence furnished by the Prentice barley and the results obtained in the malt house point to the existence of quality which in barley is synonymous with high starch content as a unit character of each variety.

The quantitative results supplied by this variety also show that we cannot accept the existing strain of Archer as representing the line of the highest productivity. The question then arises—How have our existing cereals been improved in the past, and how far, and, in what manner, are they capable of improvement in the future? A brief survey of the advancements effected by selection alone during the past century cannot fail to be of interest and value in consideration of the problem.

The first step in the improvement of cereals by selection was the isolation of pure lines or races, the term "pure" being here used to denote constancy in specific characteristics during a long number of generations.

Improvement of Cereals by Selection.

Mariano La Gasca, a Spanish Professor of Botany, living early in the nineteenth century, appears to have been one of the first to recognise the great amount of variability of the plants of our cultivated varieties of cereals.

Professor Mariano La Gasca.

Colonel Le Couteur, an eminent cerealist, relates how, when once on a visit to Jersey, Professor La Gasca pointed out to him that his wheat field, which he considered to be at least quite as pure as that of any of his neighbours, contained a considerable number of different varieties, and

Colonel Couteur's Wheat Selections.

that some of these, if cultivated individually, might prove more productive or of higher quality than those in general use. Acting on this suggestion, Colonel Le Couteur collected heads of a number of distinctive varieties, and the grains of each he afterwards grew separately. The produce of these was cultivated for some successive years until sufficient seed was obtained to compare their values by actual experiment. One of the selected varieties proved to be of particular value, was eventually placed on the market about 1830 as Talavera de Bellevue, and is to this day a valued variety amongst wheat growers.

About the same time a farmer in Haddingtonshire named Patrick Sheriff, noticing a particularly healthy plant of wheat in one of his fields, carefully manured and protected it, and later, when the seeds were ripe, harvested them separately, and sowed them the following year. After two years of rapid multiplication the variety proved to be a distinctly better one than any of those usually sown in his neighbourhood, and he then introduced it into commerce as "Mungoswell wheat." Encouraged with the commercial success of this undertaking, Sheriff made a careful search for new varieties of wheat, not only in his own, but in all the fields adjoining his farm, and was fortunate in discovering, and in course of time introducing, at least seven new varieties. Similar search and observation led in a like manner to the discovery, and finally introduction, of several new varieties of oats, many of which are still extensively cultivated in the British Isles and parts of the Continent.

Doubtless, we are indebted to other workers for many of our existing varieties of cereals; but as we are interested rather with the method of improvement than a concise history of all the many varieties introduced, the few remarks it is intended to make will deal with the work of Colonel Couteur and Patrick Sheriff. The details of Sheriff's work are closely analogous to those of Colonel Le Couteur. In a study of their methods lies the secret of all the improvement that has been effected in cereals by selection. Each recognised and isolated those already existing forms, which were visibly and distinctly superior in form, productivity, and quality to the general population of individuals amongst which they grew. Nothing new was created, but those forms which had arisen naturally, and indicated their utilitarian superiority for man's purposes

were separately propagated at the expense of inferior races. Neither Le Couteur nor Sheriff seem to have thought that a repeated selection amongst the plants raised from their selections would lead to any material improvement in any direction. At least, they do not appear to have adopted this practice.

When once isolated the new varieties were raised in consecutive years from single ears, and little by little, as the process of selection progressed, the principle of variety testing was founded. The origin of these forms is still a matter of investigation, but the subsequent constancy in their varietal features indicates their original gametic purity, and reversion to older forms or change from one variety to another has never been authoritatively recorded. Much has been written on the deterioration of cereals and their ultimate conversion from one variety to another; but, being as they always are in agricultural practice, a mixture of many forms, the explanation most probably lies in the fact that the variety best suited to the prevailing conditions of soil and climate asserts its superiority at the expense and to the exclusion of others. The rapidity with which new varieties were identified and isolated then depended, in no small measure, on the extent of the divergence in character of the selected forms from the other members of the population in which they grew.

It is a noteworthy fact that Sheriff early recognised the rarity of very distinct new forms, and in a short time he succeeded in isolating every valuable form of an abnormal character which came under his immediate notice. His work was then marked by a change of procedure. Instead of continuing his search for new varieties over a wide area, he collected a large number of strains of many varieties of cereals differing from each other in a slight degree only. These he cultivated side by side for some years, and eventually selected and increased in bulk such as appeared to possess the most valuable characteristics. In this manner he obtained the well-known Fellow Family of oats. Turning now to the cereal more directly under our consideration, the circumstances attending the introduction of two at least well-known varieties, namely, Goldthorpe and Chevallier, are worthy of passing notice.

Goldthorpe, named after its place of origin, Goldthorpe, a parish in Nottinghamshire, was started from a single ear found in a field of **Origin of Goldthorpe and Chevallier Barley.** Chevallier, no other ear of similar character being noticed in the field; while Chevallier barley, named after its originator, the Reverend John

Chevallier, of Aspoll Hall, Suffolk, was selected on account of its fine appearance from a number of plants of the narrow-eared type. Whether Goldthorpe appeared as the result of a natural cross-fertilization or as a mutation is still a question to be answered, but it has, since its introduction, maintained a remarkable degree of botanical purity.

This second step may be said to have been introduced into the British Isles by Major Hallett, and is

Pedigree Culture. known as "Selection within the line or pedigree culture." This principle, as applied to all species of plants, yields no new varieties, but rather strains improved in one or more desired directions, which rely for their continued enhancement on the repeated selection of plants exhibiting the extreme degree of the improved characters in each succeeding generation.

It is somewhat doubtful whether the adoption of this principle in connection with cereal culture has, or is likely to lead to desired advancement. The principle relies on variations of individual plants within a line for its successful adoption.

Now variations have been divided into two classes—

- Variations.**
1. Gametic variations,
 2. Fluctuating.

The former are regarded as due to differences in character of the gametas, and being such are partially permanent in character, while the latter are due to the combined influence of climate and varying cultural conditions, and are, therefore, of necessity only temporary in character.

In such species of plants as undergo cross-fertilization gametic variations will be of extremely frequent occurrence, but in self-fertilized plants, like our common cereals, gametic variation must be entirely negligible.

Variations of a quantitative nature which occur in cereals, such as the length of a head, and the number

Variations in Self-fertilized Plants.

of grains per head may be treated as temporary ones induced by exceptional cultural conditions, and it is accordingly extremely doubtful whether any distinct improvement can be made by selecting for propagation plants which show maximum variations in these directions.

The whole history of advance in the character of cultivated cereals shows that man has never, either by a single or by repeated selections, succeeded in improving in any character or characters such varieties of any cereals we to-day call "wild."

Avena fatua or *avena strigosa* have not been selected until they yield a Potato or Birlie oat. Nature has provided every new type or each modification of older types either by a single or by repeated steps of evolution; man has recognised the advancement in character, and utilised the new forms as they appeared. Some forms, as has been already stated, show a large advancement in character, while others are less marked in degree.

To-day our cereals are just as capable of furnishing varying forms as they were in the days of Sheriff, and in barley culture the multiplicity of the same has a detrimental effect on the commercial and agricultural value of the commodity.

The question then of primary importance to-day is the botanical purity of our cereal crops, and how to obtain it. The close approximation in form and character of the ears of different varieties is insufficient in forming an idea of relative agricultural and commercial values, or of establishing botanical purity; variations, either physiological or morphological, slight as they may be, must be treated as indications at least of individuality. Seed may be regarded as "pure" when the whole of its bulk had a common germinal origin.

Two methods of obtaining this purity commend themselves to our attention, one, probably the more speedy means of obtaining the bulk of seed, but certainly the most laborious, is to collect a large number of heads which represent as closely as possible the desired type, and sow the seeds obtained from such together. From the produce of these the best representative ears are again selected in successive years until, in course of time, by repeated elimination a pure line is established.

The second method is to start with a single grain or ear of the desired type, and propagate the resulting produce in successive years for as long a period as may be desired. The characters, visible and otherwise, of the grain or ear in which each pure line has its origin, determine the future character of that line, and no selection in any direction in the line is likely to result in permanent improvement. The method is identical with that adopted by Colonel Le Couteur and Patrick Sheriff in connection with their wheats and oats. Forms which exhibit even the slightest

physiological or morphological variations can be readily recognised, but nothing but individual cultivation and comparative qualitative tests will indicate those lines of one variety which vary in relative productivity alone.

In addition to the selection of barley undertaken by the Department of Agriculture in 1905, to which I have already referred, single car cultivations of the varieties then under immediate consideration were also commenced in that year. The rate of propagation was such

that in the spring of 1908 there were 312 stones of Archer and 478 stones of Goldthorpe available for use, and the estimable yield from these quantities this year are 4,000 and 7,000 stones respectively.

The relative quantitative effect of the selections have not yet been ascertainable, but the experimental plots sown with Archer and Goldthorpe this year have throughout their whole growth shown an evenness and purity hitherto unattained except by the Prentice barley.

Immediate superficial improvement is thus evidently obtainable by the adoption of single car cultivation of the best varieties.

The extent to which the application of the pure line theory to barley or any other cereal is likely to prove advantageous in determining the difference in value of strains of the same variety is a question which still remains to be answered. It is, however, quite self-evident that we cannot expect to find between lines of the same variety the same degree of difference as has been found between distinct varieties. A point must eventually be reached

where future progress relies on the hybridization of those lines of the best varieties which possess the extreme degree of desired character. Hybridization may result in a recombination of visible and latent characters, but it is not likely to be the means of producing any new or intensified characters. A rigorous selection of those varieties or lines of the same variety which possess the maximum development of any desired character must in all cases precede hybridization.

H. HUNTER.

INFLUENCE OF COLOUR OF SEED ON THE PRODUCE OF BLACK TARTARIAN OATS.

The price of Black Tartarian oats for seed depends largely upon the colour of the sample. Jet black seed is more valuable than seed which is brown or mahogany in colour; in other words, farmers pay for the colour when buying seed of black oats. The main reason advanced in favour of such a practice is the hope that the colour of the produce may be influenced by the colour of the seed sown.

To test this point the Department have carried out experiments during the past two seasons at their Agricultural Stations at Ballyhaise, County Cavan, and Clonakilty, County Cork—five experiments in all.

In each test a quantity of the best coloured seed of Black Tartarian oats procurable was purchased, and also a similar quantity of light brown coloured seed. These two samples differing as widely as possible in colour, were sown side by side under similar conditions of soil and cultivation. In some cases both lots of seed were purchased in Scotland, and in other instances both were bought in Ireland.

The plots were harvested in the usual way, and, without exception, in every single experiment the produce from both lots of seed was almost identical in colour, and of equal value.

This result would seem to indicate that the importance of good colour in the seed of black oats may be exaggerated, and that the colour in black oats depends far more upon soil, climate, and local conditions than upon the colour of the seed sown. It is generally believed that heavy cold soils will produce blacker oats than warm sandy soils, and that a better colour is obtained when black oats are sown after potatoes or roots than after grass.

While this experiment may be regarded as conclusive, the Department would advise those whose custom it is to pay high prices for colour in black oats to make some trials on their own land with good and bad coloured black seed. The Department will be obliged if those who do so will kindly communicate the results to the Secretary, Department of Agriculture and Technical Instruction for Ireland, Upper Merrion-street, Dublin.

In buying seed oats, purity, germination, and maturity of grain are certainly factors to which every attention should be given.

BEANS AS A FIELD CROP IN IRELAND.

Roughly speaking, there are between one and two thousand acres of Beans grown in Ireland every year. This season the acreage devoted to the crop is returned as 1,787 acres. For the past five years the extent of the crop shows little tendency to either increase or decrease, though there are slight fluctuations in the acreage from season to season, as the following figures indicate:—

AREA UNDER BEAN CROP.

1904.	1905.	1906.	1907.	1908.
Acres.	Acres.	Acres.	Acres.	Acres.
1,890	1,471	1,961	1,835	1,787

By far the greatest bulk of the crop is grown in the Counties of Antrim and Wexford, which are followed in order by Down, Donegal, and Londonderry. These five counties indeed claim over 95 per cent. of the total area grown: thus, in 1907, out of the 1,835 acres grown 1,744 were raised in the above-mentioned counties alone, the areas in the different counties being:—

County.	Acres.
Antrim,	786
Wexford,	454
Down,	210
Donegal,	148
Londonderry,	146

In the same season the following counties were returned as growing one acre each, viz., Carlow, Kildare, King's County, Leitrim, Longford, Louth, and Monaghan, while in the Counties of Galway, Mayo, Kerry, Queen's County, Sligo, Waterford, and Westmeath the cultivation of Beans as a field crop was completely neglected.

According to the following table, taken also from the 1907 returns, the crop, it will be seen, is mainly confined to certain districts in each of the chief Bean-growing counties:—

County.	Acres.	Unions.	Acres.
Antrim,	786	Larne,	362
		Ballycastle,	214
		Antrim,	142
Wexford,	454	Wexford,	397
		Gorey,	50

County.	Acres.	Unions.	Acres.
Down,	210	{ Newtownards,	153
		{ Downpatrick,	47
Donegal,	148	{ Londonderry No. 2,	79
		{ Ballyshannon,	46
		{ Donegal,	20
Londonderry,	146	{ Limavady	110
		{ Londonderry No. 1,	21

An examination of the returns so far back as 1847 shows (*a*) that in common with all other tillage crops the cultivation of Beans has enormously decreased; (*b*) that there is a slight increase in the decade 1897-1907, and that (*c*) the Counties of Wexford and Antrim have persisted throughout as the chief centres of cultivation. The decadal figures subjoined will serve to indicate these facts.

AREA UNDER BEANS IN IRELAND.

Total of Ireland.

Year.	Acres.	Counties.	Acres.
1847,	23,768	{ Wexford,	3,596
		{ Antrim,	2,104
1857,	10,631	{ Wexford,	4,298
		{ Antrim,	2,433
1867,	11,180	{ Wexford,	5,043
		{ Antrim,	3,024
1877,	8,584	{ Wexford,	3,101
		{ Antrim,	2,312
1887,	6,355	{ Wexford,	2,075
		{ Antrim,	2,152
1897,	1,376	{ Wexford,	366
		{ Antrim,	563
1907,	1,855	{ Wexford,	454
		{ Antrim,	786

Selecting Wexford as a typical Bean-growing centre, it will be seen that for every one acre of Beans grown in the county last season, five acres were grown twenty-five years ago, and ten acres fifty years ago. Notwithstanding this great contraction in area, however, the cultivation of the crop is still persistently followed in County Wexford, more especially in well-defined districts. Around Bridgetown, a station on the new railway line from Waterford to Rosslare, also around Kilmore, which is nearer the sea coast, the crop is widely cultivated by the local farmers. As a rule, Beans are here grown on two or three-year-old lea; sometimes a crop is grown after Barley, but this practice is not much favoured. The

end of November or the beginning of December is the customary time to sow. A fair dressing of farmyard manure is first spread over the surface of the lea sod; the seed is then broadcasted and ploughed in with a very shallow furrow; the furrows are usually gathered into 8-foot ridges with intervening trenches; subsequently the trenches are themselves ploughed, and to provide additional cover, an adaptation is fitted on to the plough whereby the clay taken out of the trench is spread as widely over the ridges at either side as possible. The roller is then passed over the surface to level the furrows, and, by equalising the depth of covering soil, to encourage the young plants after germination to come up evenly and straight. About 30 stones, *i.e.*, $1\frac{1}{2}$ barrels to the Irish acre are considered a sufficient seeding. The variety of Beans grown is peculiar to County Wexford, and some recent experiments have shown that they do better than varieties imported from Scotland, England, and the North of Ireland. As a rule, Wexford farmers supply each other with seed, and a sufficiency for this purpose is kept over each year. The crop is reaped about September with the ordinary reaping machine, and it is usually cut somewhat green to prevent subsequent loss from shelling, a result which will happen if allowed to ripen too much. On the smaller holdings, where the plots also are small, the crop is usually pulled by hand, and chiefly after rain, when the ground is soft and little danger of shelling likely. It is generally considered more desirable, however, to cut the crop with a machine, as the residue of roots left in the ground serves to enrich the soil manurially, and by keeping it open for the succeeding root crop improves its physical condition. Threshing is done with the steam threshing machine, though on the smaller holdings the ordinary horse-power mill, or even the flail is employed. The straw is not made any use of in County Wexford for either fodder or bedding, but is generally put up in stacks convenient to the farm house and used as fuel during the winter. It burns away quickly, and gives out a bright flame and considerable heat.

The yield obtained runs from 12 to 20 barrels (20 stones) per Irish acre; and probably 15 barrels per Irish, or nearly $9\frac{1}{2}$ barrels per statute acre, may be taken as the average. Price ranges from 15s. to 17s. per barrel, though in some years it may reach as high as 20s. The crop is entirely marketed in Wexford city, and is bought by the leading seed merchants, who ship it directly in small schooners to Glasgow; a proportion of it, however, finds its way to firms in this country, who utilise it in combination for horse feeding.

close weather, which also favoured heating in stacks. Considerable loss of grain also occurred from shedding whilst the crop was being handled in the field. There is wide variation noticeable in the yield of grain which has been threshed. From some districts the crop is reported as yielding exceptionally well, while from others it is described as below average. Owing, no doubt, to the soft quality of much of the oats now being marketed, prices are reported as low.

Reports from the chief barley-growing centres at this stage show that where the plan of hand-stacking in the field was adopted, the damage done to the grain will not be so serious as at first supposed. Threshing is being rapidly pushed on in the earlier counties, and good yields are reported from Queen's County and Cork. By far the largest portion of the crop in County Wexford was still in the field at the opening of the month, and little if any threshing had been done up to the 13th October. The reports regarding the state of the crop in Wexford show that growers there have suffered more than those in Queen's County, Tipperary, or Cork. In these three latter counties a considerable amount of threshing has been done, and the yields are stated to be satisfactory.

On the whole the reports on the cereal harvest at the middle of the present month are much more favourable than those received at the close of September. The injury done to the grain crops, while general all over the country, appears to have been more extensive and irremediable in some counties and even in some districts of the same county than in others. The extreme northern, southern, and some of the midland counties appear to have suffered most, and it is from these centres that the harvest is spoken of as the worst ever experienced by farmers. Should the present fine weather, however, continue throughout October this opinion may be modified to that of the County Down correspondent, who, summing up the bad features of the season, concludes that on the whole it has not been so bad as last year; in any case, so long as the bright, breezy weather of the first two October weeks continues it is certain to remedy much of the damage suffered, and to benefit greatly the condition of both grain and straw.

SUMMARY OF FRUIT CROP REPORTS, OCTOBER, 1908.

In continuance of the Fruit Crop Report which appeared in the July issue of this *Journal*, the following summary, compiled from a series of reports received by the Department through the courtesy of correspondents in the different counties, shows the general character of the season in respect of tree fruits.

Leinster.

Apples, a fair to good crop, variable; complaints from some districts of much damage to trees through canker. Pears on the whole a very poor crop; fair in sheltered situations. Plums and Damsons a very light crop.

Apples a plentiful crop. Pears very scarce. Plums and Damsons have the smallest crop for a number of years; silver-leaf attack complained of in some places. Insect attack has not been so severe as in other years.

Apples scarcely an average crop; did not ripen out well; much fruit shaken off by wind and damaged.

County Kildare. Pears a small crop. Plums under average; were much injured by wasps.

Apples a light crop in some places; in other districts good; older trees bore best; fruit smaller than usual. Pears a medium crop, variable. Plums and Damsons both bad crops. The chief insect attack was codlin moth on Apples; the black spot fungus was also a source of injury to this crop.

Apples a poor crop. Pears also scarce. Plums and Damsons poor. Not much trouble from insect or fungoid attack this season.

County Louth.

Apples and Pears a moderate crop. Plums and Damsons poor.

Apples a fairly good crop of average fruit. Pears below the average. Plums and Damsons a light crop in general. Much canker and black spot in old orchards.

County Louth.

Apples below average. Pears a light crop. Plums average.
Damsons a lighter crop than usual. Crab

County Meath. apples gave an average yield. American
blight very prevalent in old orchards.

Canker and mussel scale also a source of much injury to many trees.

Apples about, or hardly, an average crop. Pears very scarce.

Queen's County. Plums a bad crop. Damsons where grown
a fair crop. Apple and Pear trees suffered
slightly from aphid attack. The codlin

moth did much damage in some districts. Owing to the nature
of the weather much of the apple fruit fell off the apple trees
prematurely.

Apples turned out better than expected; a good crop on old-
established trees. Pears very few. Plums

County Westmeath. a bad crop. Damsons were above average
in yield. There was much injury done by
birds to the fruit crop as a whole.

Apples a light crop and very scarce, especially on young trees.

County Wexford. Pears, Plums and Damsons bad. Crab
apples scarce. Much of the apple fruit
was blown down before ripe. American

blight not so noticeable this season, but canker on apple and pear
trees very prevalent.

Apples in general a good crop and the fruit of good quality.

County Wicklow. Pears poor in general. Plums generally
a failure; Damsons were very fair.
Cherries a small yield, especially Morellos.

Insects were not so troublesome as in other seasons; there were
some instances of mildew on apple trees.

Munster.

Apples very variable, but on the whole a good crop and finished
well; much damage done by gales in early

County Clare. September. Pears a moderate crop. Plums
gave barely an average yield. Damsons
also poor. Cherries on walls about half a crop. American blight
and the plum aphid were the most common of the insect pests,
which were not so troublesome as other seasons. Black spot and
canker were the chief forms of fungoid attack.

Apples an average crop. Pears a bad yield and below average. Plums very light. Damsons little grown. Much fruit ripened prematurely. Canker and black spot very prevalent.

County Cork.

Apples a poor crop in general; good quality on trees properly treated. Pears very bad in the open; a fair crop on walls. Plums and Damsons not much grown. Canker prevalent.

County Kerry.

Wasps did much harm during the drought in August. Codlin moth did not give so much trouble as in previous years.

Apples under average. Pears a fair crop in some situations; as a rule, much below average. Plums and Damsons a bad crop.

County Limerick.

Apples a fair crop; young trees bore a better crop than the older planted trees. Pears good on young trees, but crop, as a rule, light. Plums scarce. Damsons not much grown.

County Tipperary.

Figs good on walls. Loganberries very good. Crab apples good. Orchards fairly free from canker. Chief insect pests were green fly, ermine moth, mussel scale, and black-currant mite.

Apples, young trees bad crops; old trees average. Pears a very poor crop. Plums about half a crop; poor in general. Damsons variable in different districts.

County Waterford.

Ulster.

Apples a poor crop; fair in some districts; orchards properly cultivated carried good crops. Pears on standard trees almost a failure; on walls a fair crop; a few trees bore good crops.

County Antrim.

Plums a medium crop; good in places. Damsons a light crop in general. Trees where properly sprayed and pruned were fairly free of insect attacks; where unattended were badly affected. Apple canker and black spot very prevalent in the old orchards.

Apples all round a fairly good crop; Bramley seedling did not do so well as previous years. Pears a poor crop in general. Plums and Damsons were fair to poor. Black scab caused a lot

of injury to fruit in some districts. There are complaints from some districts that winter moth and apple sucker have caused much damage. Spraying appears to be more generally done than formerly.

Apples a fair crop. Pears little grown, poor. Plums and Damsons have not done well. Canker very prevalent.

County Cavan.

Apples a fair crop. Pears bad in general. Plums scarce. Damsons an average yield.

County Donegal.

Apples fair to good. Pears a very thin crop. Plums good on the average. Damsons a small crop. Insect pests have been troublesome, especially winter moth and woolly aphis. Fungoid attack not so destructive as last year.

County Down.

Apples, good crops on cultivated land; otherwise yields small; much fruit fell off during the heat and drought in July. Pears a poor crop in general. Damsons a fair crop. Cherries bad; very little grown. Ravages of winter moth and apple sucker much checked by spraying. Apple scab and canker were the chief fungoid pests.

County Fermanagh.

Apples fair in general; fruit is, as a rule, under size. Pears medium and very irregular. Plums fair. Damsons not much grown, good. Insect attack did not give much trouble this year. Fungoid pests are, however, very prevalent.

County Londonderry.

Apples good. Pears bad, not many grown. Plums fairly good. Damsons medium crop. Cherries a fair crop. American blight, winter moth, and apple sucker did much damage on apples; green and black fly on plums. Apple scab and canker very prevalent.

County Monaghan.

Apples plentiful, but small; in some districts, however, the fruit finished up very well. Pears, as a rule, poor; not very widely grown. Plums on walls good; on trees about average. Damsons scarcely half a crop. Insect and fungoid attacks not so severe as in other years.

County Tyrone.

Connaught.

Apples average; turned out better than they promised earlier in the season. Pears very bad. Plums

County Galway. poor in general; good in favoured districts. Damsons very little grown. Ermine moth and American blight the most injurious insects.

Apples in general good. Pears poor. Plums about average.

County Leitrim. Damsons a light crop. Insects not very injurious on large trees this season.

Apples good in some districts; in others bad. Pears good to fair, variable. Plums also variable; good

County Mayo. crops in some districts. Damsons little grown; a fair crop in general. Gales in September did much harm to apples and late pears. Woolly aphis prevalent.

Apples poor to average. Pears under average. Plums a light crop. Damsons poor. Apple canker the

County Roscommon. chief fungoid pest. American blight very prevalent in apple trees.

Apples fairly good in general. Pears poor. Plums a light bad crop. Damsons not much grown. Wasps

County Sligo. did much harm this season.

SPROUTING SEED POTATOES.

LATE VARIETIES.

The system of sprouting seed potatoes when the crop is required for early marketing is now well understood; but the extension of the practice to seed of main crop varieties has not yet become general. The Department feel that if the advantages of the system were clearly indicated, and figures were given showing actual results obtained under varying conditions in all parts of the country, farmers would not hesitate to sprout all the seed potatoes which they plant. Such is the object of this article.

ADVANTAGES OF SPROUTING SEED POTATOES.

The main advantage of sprouting seed potatoes in boxes before planting is that an increase in the crop yield is obtained, which more than compensates for the cost of the boxes. Approximately 100 boxes are required to hold sufficient seed to plant one acre, and the cost of the boxes, at 4*d.* each (they can often be bought cheaper) is just over 33*s.* If reference be made to the table on page 119 it will be seen that the average increased yield due to sprouting in no less than 271 tests is over two tons per acre, and as this increase is entirely in saleable potatoes the value is at least £4 per acre, or more than double the initial cost of the boxes. Moreover, as the boxes will last for several seasons, their cost is repaid many times over before they are worn out.

Another great gain from sprouting seed is that the crop matures earlier, with the result that the tubers are well developed when blight appears, consequently the risk of crop failure is greatly reduced, and, in addition, the potatoes can be dug earlier in the autumn, and there is not so much loss from the tubers becoming affected with disease in the soil.

Of equal importance is the fact that sprouted potatoes can be planted later than seed not so treated, and without diminishing the crop yield. This benefit is most marked in a late wet spring, when potatoes are often planted under unfavourable conditions and, consequently, make but slow growth for weeks afterwards. In such a season, if the seed is properly sprouted, planting may safely be delayed for several weeks, and the potatoes will eventually make better growth than if the old system had been followed.

A further advantage of the system of sprouting is that owing to the more vigorous growth of the crop, particularly during

the first two months after planting, weeds are checked to such an extent that they cause little trouble during the remainder of the season. Moreover, there are fewer blanks in crops grown from sprouted seed.

Sprouting potatoes in boxes affords an excellent opportunity of detecting mixtures or "rogues." Scarcely any two distinct varieties have exactly similar buds; thus, Up-to-Date has a greenish sprout with a pink tip, while the Champion produces an almost purple bud. The colour of the sprouts may be changed to some extent by exposure to light, but the differences referred to will be none the less evident.

Seed potatoes can be stored during winter more conveniently in boxes than in any other way; the boxes can be piled up to any height in a building, space is economised, the potatoes can be easily and thoroughly examined at any time, but what is of the greatest importance the first sprout or bud of the tuber is preserved, and it is mainly owing to this fact that the resulting plants are more vigorous and that the system is so advantageous.

When seed potatoes are stored in pits they invariably sprout more or less before the following spring. It is customary to turn the potatoes in the pits during February or March, consequently the buds may be broken off then, and again at planting time. Such treatment reduces the vigour of the sprouts produced after the seed is planted, with the result that there is a diminution in the crop yield. It is, therefore, because the first bud or shoot is preserved that there is stronger growth, and to this fact may be attributed most of the advantages of the system.

BOXING.

The placing of the potatoes into boxes is quite simple. The tubers are poured into the boxes until they are level with the sides. Nothing else is necessary.

Boxes of the size recommended by the Department will hold about 20 lbs., or six boxes about 1 cwt. of seed.

SIZE OF SEED.

The size of seed cannot always be regulated, but, as a general rule, and this is a point to which the Department attach great importance, seed should be selected about the size of a hen's egg. It should be sprouted in the boxes and planted whole. It is not generally advisable to cut sprouted seed, nor should there be any desire to do so, as the best results are obtained from medium-sized potatoes planted whole.

If, however, it is desired to plant cut seed, the cutting should be confined to large tubers, and these should not be made into more than two or three sets. Cutting should be delayed until shortly before planting, and the cut surfaces should be dusted over with air-slaked lime. Small tubers should never be cut.

STORING BOXED POTATOES.

Seed potatoes should be filled into boxes at the time the crop is lifted in the autumn. The boxes should then be stored in an open shed so as to allow the potatoes to become green and thoroughly hardened. As soon as there is danger from frosts the boxes may be placed in any convenient building. In the building two rows of boxes may be placed side by side, and piled up to the desired height, but a space of about fifteen or eighteen inches should be left between each two rows. After this stage it is hardly possible to give detailed directions for storing, as the conditions will vary, but the sole aim should be to obtain sprouts which at the time of planting are about one inch long and quite green and tough.

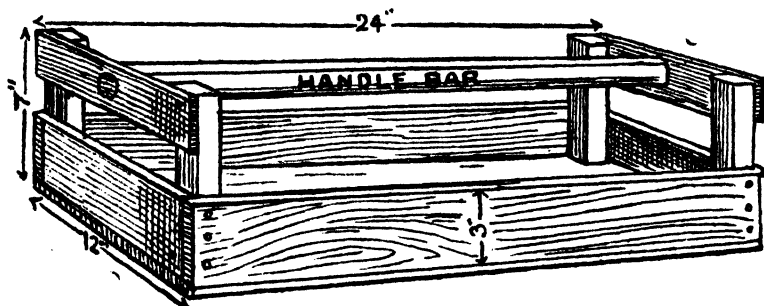
This is a matter which can be regulated by light and heat. Darkness and warmth promote rapid growth. Light and a low temperature retard growth. The best results are obtained when the sprouts have developed slowly and have been exposed to light during the whole period.

It is necessary to warn farmers that their chief difficulty, especially when the boxes are stored in a dark building, will be to prevent the sprouts from growing too long. If the buds are long they are liable to become broken off at planting time. The difficulty referred to can be overcome if it is remembered that growth can always be checked by placing the boxes in cooler and better lighted buildings. Boxes may be stored in byres and stables when it is desired to promote quick growth, or to start growth early in winter, but if the potatoes are allowed to remain in such places until planting time the sprouts are almost certain to be far too long as well as white and tender. As a general rule the temperature in byres and stables is too high to give the best results.

During severe frost the boxes next the roof, windows, or doors may be covered with bags or straw, but it is rarely found necessary to provide artificial heat.

TYPE OF BOX.

The accompanying illustration indicates the type of sprouting box recommended, and at the same time supplies full particulars as to dimensions.



The boxes are now made in many country towns in Ireland, or they can be obtained from merchants in Dublin, Belfast and Cork. The price varies from 25s. to 35s. per 100, according to the quality of timber used and the number of boxes purchased at one time. The Department advise farmers to purchase only strong, well-made boxes.

SUMMARY OF RESULTS OF EXPERIMENTS.

The following table shows the average yield from sprouted and unsprouted seed and the average increase in yield due to sprouting in 271 tests carried out during the five years 1903-7.

	No. of Centres.	Average yield per Statute Acre.				Average gain in yield due to Sprouting.	
		Sprouted Seed.		Unsprouted Seed.			
		T.	C.	T.	C.	T.	C.
1903, . . .	12	11	1	9	8	1	13
1904, . . .	34	11	6	8	13	2	13
1905, . . .	91	12	17	10	16	2	1
1906, . . .	67	11	9	9	2	2	7
1907, . . .	67	10	6	8	6	2	0
Average of 271 Tests, . . .		11	12	9	9	2	3

In every case the tests were carried out under similar conditions as to soil, manuring, variety, and cultivation, the only difference being that the seed for one plot was sprouted, and the seed for the other was not. All the most common varieties of potatoes were included in the experiments, and the tests were made in all parts of the country. The conditions embraced all that are likely to occur in the general cultivation of the potato crop, and the

almost uniform results obtained under such varied circumstances may surely be regarded as conclusive.

OBJECTIONS URGED AGAINST BOXING.

Farmers not infrequently express the opinion that the operation of planting would be rendered more tedious and expensive by the adoption of the system of sprouting. Such is not the case, and indeed many of those who have tried the system are convinced that seed can be planted more quickly from the boxes.

Again it is urged that the sprouts would be broken off when the tubers were being covered by the plough. There is, however, little danger of this happening if the buds are not too long and if they have been toughened by exposure to light previous to planting.

It is stated also that farmers have not suitable houses in which to store the boxes. This may be a drawback in some cases, but as nothing elaborate in the way of housing accommodation is required, the matter should not present any insuperable difficulties on any well regulated homestead.

GENERAL OBSERVATIONS.

There has been a widespread extension of the system of sprouting seed of late varieties during the past few seasons, and perhaps the most satisfactory feature is that wherever the method has been fairly tried its advantages have at once been realised. There is, however, scope for much further development of the practice, and the Department trust that in the near future the greater portion of the seed potatoes planted in Ireland will be sprouted on the lines indicated in this article.

The following leaflets referring to potatoes have been issued by the Department:—

- No. 14.—Prevention of Potato Blight.
- No. 19.—Early Potato Growing.
- No. 38.—Field Experiments—Potatoes.
- No. 81.—Potato Culture on Small Farms.
- No. 82.—Cultivation of Main Crop Potatoes.
- No. 91.—Black Scab in Potatoes.

Copies of this article in revised leaflet form (No. 58) and the leaflets mentioned above may be obtained free of charge, and post free, on application to the Secretary, Department of Agriculture and Technical Instruction for Ireland, Upper Merrion-street, Dublin. Letters of application so addressed need not be stamped.

EGG RECORDS:

In the issue of the *Journal* for July (Vol. VIII., No. 4) an article dealing with the question of the value of egg-laying records appeared. The article was supplemented by a series of tables showing some statistics for the six months—January-June, 1908. The collection of records has been continued and the appended tables set forth the statistics for the months July-September of this year. A new series of records has been commenced for the year 1st October, 1908, to 30th September, 1909—this, rather than the calendar year, being the poultry year—and the Department will be glad to know of farmers and poultry-keepers who wish to have their names added to those who are willing to keep careful records of their egg yields during the year. The Department are prepared to supply gratis an egg record book in which such records can be kept.

EGG RECORD.—JULY—SEPTEMBER.

SUMMARY TABLE.

Name of Breed.	July.		August.		September.		Total of Monthly Averages.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
White Leghorns, ..	366	13.0	355	10.2	345	5.3	29.4
Brown Leghorns, ..	100	15.2	87	14.5	84	9.9	39.6
Black Minorcas, ..	261	14.2	256	10.8	245	6.0	31.0
Buff Orpingtons, ..	259	12.4	250	11.5	244	8.7	32.6
White Orpingtons, ..	50	8.0	50	8.4	45	9.0	25.4
White Wyandottes, ..	233	12.2	221	9.2	214	6.8	28.2
Plymouth Rocks, ..	300	9.5	355	7.5	334	6.8	23.8
Faverolles, ..	257	9.4	248	10.1	270	7.9	27.4
Houdans, ..	38	8.7	33	5.4	33	7.7	21.8
Light Sussex, ..	27	10.0	25	11.0	25	11.7	32.7
Mixed Pure Breeds, ..	619	13.5	602	11.8	571	9.8	35.1
Pure and Cross Bred, ..	446	13.1	425	12.1	465	6.4	31.6
Cross Bred, ..	946	13.8	901	11.2	874	8.8	33.8
Mongrels, ..	414	9.2	375	8.6	327	8.7	26.5
Pure Bred, Cross Bred and Mongrels in Mixed Flocks.	965	11.6	921	11.0	854	8.3	30.9
Totals, ..	5,371	12.2	5,104	10.6	4,930	7.9	30.7

EGG RECORD—JULY—SEPTEMBER, 1908.

WHITE LEGHORNS.

No.	July.		August.		September.		Remarks.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1	40	17.3	36	17.7	30	11.6	Free range. Hens moulting in September.
2	22	19.4	22	14.6	22	5.5	Free range. Hens moulting in September. Hatched in 1907.
3	32	17.6	32	16.2	32	3.7	Free range. Hens moulting in September. Hatched in 1907.
4	27	20.2	27	12.6	27	1.6	Free range. Hens moulting in September. Hatched in 1907.
5	20	16.5	20	10.3	26	8.7	Free range.
6	37	11.3	35	9.0	35	9.9	Free range. Seventeen hatched in 1906, and others in 1907.
7	34	17.2	32	8.2	30	2.0	Free range. Birds moulting in August and September.
8	30	12.2	30	8.2	30	7.9	Birds moulting in September.
9	10	11.4	9	8.0	9	2.6	Free range on grass. All hatched in 1907.
10	28	13.3	27	9.9	26	3.0	
11	22	10.9	21	8.4	26	2.4	Free range on grass. All hatched in 1907.
12	30	6.0	30	6.6	30	6.3	
13	34	6.5	34	1.6	34	1.1	Free range on grass.
Total,	366	13.9	355	10.2	345	5.3	

BROWN LEGHORNS.

1	30	19.1	28	18.6	25	13.3	Free range on grass. Moulting in September. Grass run, with portable house. Birds moulting in September.
2	24	12.8	23	17.0	23	15.0	
3	16	16.8	16	9.4	16	4.2	
4	30	12.3	20	10.1	20	4.2	
Total,	100	15.2	87	14.5	84	9.9	

BLACK MINORCAS.

No.	July.		August.		September.		Remarks.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1	26	16.7	26	16.1	26	13.9	Free range on grass. Eighteen birds hatched in 1907; others in 1906.
2	30	21.0	30	12.4	30	3.1	Free range on grass. Birds moulting.
3	30	16.2	30	13.6	30	10.7	Free range.
4	24	16.2	24	11.3	19	7.2	Birds moulting in September.
5	29	18.2	29	11.4	29	4.8	Birds moulting.
6	34	9.0	34	7.5	34	5.0	Grass run. Twenty four birds hatched in 1907; others in 1906.
7	30	10.2	28	8.6	24	6.1	Free range.
8	30	11.2	27	12.0	25	2.6	Free range.
9	28	10.0	28	5.0	28	1.4	Grass run. Hatched late in 1907.
Total,	261	14.2	256	10.8	245	6.0	

BUFF ORPINGTONS.

1	37	19.9	37	17.1	36	14.6	Free range.
2	15	13.7	15	16.7	15	14.2	Free range.
3	5	14.0	7	14.8	5	17.0	Three hens rearing second broods, July to September.
4	31	13.1	30	10.3	30	7.0	Free range.
5	36	10.6	37	9.3	36	8.7	
6	26	12.5	26	12.4	30	8.4	Free range on grass. Twenty-five birds hatched in 1907; others in 1906.
7	25	11.2	22	11.6	16	9.1	Free range.
8	30	10.0	24	9.1	24	8.7	
9	30	11.0	30	9.9	30	3.7	
10	24	7.1	22	7.1	22	2.7	
Total,	259	12.4	250	11.5	244	8.7	

WHITE ORPINGTONS.

1	20	11.0	20	10.0	15	8.5	Confined grass run.
2	30	6.0	30	7.3	30	9.1	
Total,	50	8.0	50	8.4	45	9.0	

WHITE WYANDOTTES.

No.	July.		August.		September.		Remarks.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1	40	17.4	40	14.2	40	11.1	Large grass run. Birds moulting in August and September. Free range and portable house.
2	18	15.5	18	12.8	18	11.5	
3	30	11.6	30	10.8	30	11.4	
4	20	14.3	20	7.8	16	7.0	Birds moulting in September.
5	30	9.7	30	9.7	30	5.8	Birds moulting in September.
6	40	6.8	20	4.1	20	2.0	Free range. Birds hatched in 1907.
7	20	7.3	20	6.9	20	2.4	Free range on grass, with portable house.
8	21	9.6	21	5.2	21	1.4	Grass run. Birds hatched in 1907. All moulting.
9	5	9.6	4	10.0	1	6.0	Birds moulting in July and August.
Total,	233	12.2	221	9.2	214	6.8	

BARRED PLYMOUTH ROCKS.

1	20	23.0	20	19.1	20	14.6	Free range. Hatched in 1907. Moulting in September.
2	18	14.5	18	14.3	18	15.0	Free range on grass. Ten hatched in 1907; others in 1908.
3	50	12.1	50	11.1	50	9.1	Free range. Hens moulting.
4	25	14.4	25	11.4	15	8.7	Free range on grass. All hens moulting.
5	30	8.2	26	12.1	24	6.6	Free range on grass. Portable house. Hens moulting.
6	20	6.3	28	5.0	24	4.4	Free range. with portable house.
7	30	6.6	30	2.3	30	2.1	Free range on grass.
8	22	11.0	22	3.6	22	0.0	Free range on grass. Portable houses. All moulting in September. Hatched in 1906, 1907, and 1908.
9	35	7.6	38	4.4	38	4.7	Free range.
10	30	4.0	25	6.2	25	7.0	Three of the birds—pullets—only, began to lay in middle of September.
11	28	10.4	27	6.0	24	2.0	
12	25	2.6	24	1.5	22	1.9	Free range, and very little shelter. Hens moulting in August and September.
13	22	1.7	22	2.7	22	1.7	Free range in orchard. Hens moulting.
14	26	15.3	Record incomplete. No return.				
Total,	390	9.5	355	7.5	334	6.8	

FAVEROLLES.¹

No.	July.		August.		September.		Remarks.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1	8	18.0	8	13.5	8	11.6	Birds deep in moult at end of September. Free range on grass, with portable houses. Twenty hatched in 1907, fifteen in 1906, and five in 1905. Free range.
2	40	14.2	40	12.2	40	10.2	
3	32	11.0	31	8.6	30	3.7	
4	38	10.2	33	11.6	33	11.7	Some free range on grass, with portable houses, and some in grass runs. Birds in moult in September. Free range on grass. Ten hens moulting. Free range.
5	30	10.3	30	9.9	30	9.4	
6	40	10.7	No return.	No return.	No return.	No return.	
7	16	3.8	16	6.0	16	3.0	Free range on grass, with portable houses. Free range.
8	30	4.6	30	6.9	30	6.9	
9	No return.	No return.	No return.	No return.	30	4.2	
10	23	1.5	20	1.6	20	0.5	
11	No return.	No return.	40	8.6	33	14.0	
Total,	257	9.4	248	10.1	270	7.9	

HOUDANS.

1	12	15.4	9	11.0	9	3.6	Birds hatched in 1907. Free range and portable houses. Nineteen birds hatched in 1907; others in 1906.
2	26	5.6	24	3.4	24	9.2	
Total,	38	8.7	33	5.4	33	7.7	

LIGHT SUSSEX.

1	17	10.2	16	11.0	16	12.5	All hatched in 1907.
2	10	9.7	9	11.2	9	10.4	
Total,	27	10.0	25	11.0	25	11.7	

MIXED PURE BREEDS.

No.	July.		August.		September.		Remarks.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1	40	21.2	45	19.1	45	12.9	Minorcas and Leghorns.
2	37	17.6	35	16.0	35	11.4	Minorcas and Plymouth Rocks.
3	30	16.2	30	12.0	30	11.3	White Wyandottes, White Leghorns, Faverolles, and Buff Orpingtons.
4	62	17.1	60	14.5	57	16.0	White Wyandottes, Plymouth Rocks, Faverolles, and Buff Orpingtons.
5	25	12.5	26	13.1	15	11.3	White Wyandottes, Houdans, and Buff Orpingtons.
6	24	16.0	24	14.0	24	12.0	Free range. Faverolles and Buff Orpingtons.
7	30	10.1	30	10.8	26	10.0	Free range. White Leghorns and Buff Orpingtons.
8	30	10.7	30	12.4	30	10.1	Free range. White Wyandottes, Buff Orpingtons, and Plymouth Rocks.
9	25	15.2	25	13.0	25	10.0	Free range. White Wyandottes, Buff Orpingtons, and Plymouth Rocks.
10	73	11.1	68	14.3	62	15.6	Free range. Black Minorcas Plymouth Rocks, White Wyandottes, and Houdans.
11	88	8.3	88	3.5	88	3.1	Free range. Faverolles, Orpingtons, and Wyandottes.
12	40	13.6	37	13.0	34	6.0	Faverolles and Buff Orpingtons.
13	115	13.2	110	9.9	100	6.2	White Leghorns, Houdans, Anconas, and Plymouth Rocks.
Total,	619	13.5	602	11.8	571	9.8	

PURE AND CROSS BRED.

1	136	19.0	130	16.5	170	6.3	Confined run.
2	13	16.7	13	16.9	13	13.2	
3	22	17.8	22	15.4	22	12.4	
4	50	14.7	45	13.6	45	13.4	Free range. Twenty-four hatched in 1907, eleven in 1906, others earlier.
5	30	10.2	30	12.2	30	5.3	Free range. All hatched in 1906 and 1907. Sussex White Leghorns, and first cross Leghorns and Orpingtons.
6	40	9.7	40	8.8	40	3.7	Free range. Leghorns and cross-breeds.
7	45	9.1	45	6.4	45	2.5	Free range. White Wyandottes, Plymouth Rocks, Minorcas, and the first crosses obtained from these and a Houdan cock.
8	60	5.8	60	8.5	60	4.7	Birds moulting.
9	50	8.9	40	7.8	40	4.8	Free range on grass. Thirty hatched in 1907, others in 1906. White Wyandottes Plymouth Rocks, and Houdans, and their crosses.
Total,	446	13.1	425	12.1	465	6.4	

CROSS BRED.

No.	July.		August.		September.		Remarks.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1	43	20.4	50	18.6	50	16.2	Free range. Twenty-five of the birds are pullets, and twelve of these were hatched in March, 1908.
2	40	25.5	40	18.2	40	7.3	Some at liberty and some in a pen. Cross-bred Plymouth Rocks, Buff Orpingtons, and Brown Leghorns.
3	15	16.5	16	12.0	15	10.3	Free range. Buff Orpingtons and Plymouth Rocks crossed with Faverolle cocks.
4	58	18.1	54	12.1	54	9.9	Free range. Plymouth Rocks and White Leghorn crosses.
5	90	14.9	90	13.3	90	10.3	Limited grass run. Minorcas, Leghorns, Wyandottes, and Faverolles.
6	80	15.3	76	12.6	76	10.3	Free range on grass. Rocks, Leghorns, and Buff Orpingtons crosses.
7	40	12.8	40	12.5	40	10.3	Free range. Buff Orpingtons, and White Leghorns crosses.
8	60	15.4	60	12.3	60	7.2	Free range. Houdan-Minorcas and Houdan-Leghorns.
9	73	13.3	73	11.4	73	7.8	Free range. Plymouth Rocks and Buff Orpingtons crossed with Wyandottes.
10	40	15.3	40	13.7	40	7.2	Free range. Half-bred Leghorns.
11	50	7.0	48	8.6	40	11.4	Free range. Leghorns, Minorcas, Faverolles, and Buff Orpingtons crosses.
12	35	9.5	35	6.6	35	4.7	
13	36	8.1	36	4.4	36	2.1	
14	24	10.7	20	9.8	22	8.0	
15	28	11.3	27	7.2	27	7.0	Free range.
16	100	11.4	100	10.5	80	8.7	
17	36	8.0	36	5.5	36	6.8	Free range.
18	60	10.1	60	6.3	60	8.0	
19	38	16.4	Return inc omplete.				
Total,	946	13.8	901	11.2	874	8.8	

MONGRELS.

1	30	13.0	30	15.2	40	13.9	Free range.
2	80	13.6	60	12.6	50	9.5	Free range.
3	54	11.2	50	11.7	48	9.0	Free range.
4	126	7.1	125	5.8	85	9.0	Free range. Pure-bred cocks are kept, and breed is changed each year.
5	24	7.0	24	5.7	24	4.0	Free range.
6	40	8.5	30	10.5	30	9.9	Free range. Pure-bred Buff Orpington cocks are kept.
7	60	10.4	56	7.6	50	8.1	Free range.
Total,	414	9.2	375	8.6	327	8.7	•

**PURE-BRED, CROSS-BRED, AND MONGRELS IN
MIXED FLOCKS.**

No.	July.		August.		September.		Remarks.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1	48	19.6	48	10.1	48	10.0	Free range.
2	60	13.6	60	10.0	45	7.4	do.
3	56	16.7	50	12.2	46	9.6	do.
4	39	18.5	39	18.4	No return.		do.
5	130	14.6	120	14.6	120	11.5	do.
6	59	16.5	50	16.3	50	14.0	do.
7	75	10.4	70	6.6	65	2.7	do.
8	40	15.2	40	12.9	35	11.5	do.
9	33	6.7	30	4.7	30	6.1	do.
10	38	5.1	36	6.0	36	7.2	do.
11	31	6.3	31	9.0	31	8.9	do.
12	40	4.1	40	5.8	40	4.7	do.
13	30	10.0	29	9.5	29	5.6	do.
14	95	13.0	90	10.4	85	9.0	do.
15	70	10.9	69	8.1	67	8.1	do.
16	56	2.0	50	5.1	48	3.7	do.
17	34	4.2	34	6.0	31	5.5	do.
18	40	7.5	40	6.1	40	6.0	do.
Total,	965	11.6	926	11.0	859	8.3	

OFFICIAL DOCUMENTS.

I.—AGRICULTURE.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET, DUBLIN,

No. 18959/08.

12th September, 1908.

FERTILISERS AND FEEDING STUFFS ACT, 1906.

SIR,

I have to state that the Department regret to find that there are still many traders and agents throughout the country who make a practice of selling manures and feeding stuffs without giving proper invoices to purchasers as required by the above Act. In order to direct the attention of such persons to their legal obligation in this matter the Department have issued a leaflet on the subject, a copy of which is enclosed for your information.

I have to express the hope that you will be so good as to assist the Department in the circulation of this leaflet by distributing copies, as opportunity offers, amongst agents and others concerned in the sale of articles manufactured by your firm.

A supply of the leaflet in question will be sent to you for the above purpose on receipt of an application stating the exact number of copies required.

I am,

Sir,

Your obedient Servant,

T. P. GILL,

Secretary.

To the Manager of the firm named in the address.

DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND.

Fertilizers and Feeding Stuffs Act, 1906.

The Department desire to direct the attention of vendors of fertilizers and feeding stuffs to the fact that, upon making a sale or delivery of any of these materials, however small the quantity, it is necessary, in order to comply with Section 1 of the Fertilizers and Feeding Stuffs Act, 1906, to give to the purchaser *an invoice* stating the name of the article sold as

well as certain particulars as to its guaranteed composition. Vendors who fail to supply purchasers with proper invoices as required by the provisions of the above Act render themselves liable on summary conviction for a first offence to a fine not exceeding *Twenty Pounds*, and for any subsequent offence to a fine not exceeding *Fifty Pounds* (vide Section 6 (1) of the Act).

In this connection it may be stated that recently in the Police Courts at Cork proceedings were instituted by the Department against a firm in that city for selling a quantity of calf meal without giving with it the prescribed invoice. Evidence having been given as to the purchase of the meal the Solicitor for the defendants said that his clients had been in the habit of giving invoices and that their failure to do so on this occasion was due to an error of omission. They could, of course, make no answer to the summons, for they did make the omission, and they, accordingly, pleaded guilty. The Magistrates imposed a *fine of 10s. and 20s. costs*, and in doing so they expressed the hope that the case would be a warning to all engaged in the trade.

Vendors desiring further information in regard to the requirements of the Act respecting invoices are referred to the Itinerant Instructors in Agriculture for their respective counties, whose duty it is to advise, as far as possible, on all matters connected with the sale of fertilizers and feeding stuffs.

Copies of the Fertilizers and Feeding Stuffs Act, 1906, may be had from Mr. E. Ponsonby, Government Sale Agent, 116, Grafton-street, Dublin, price $1\frac{1}{2}d.$, or post free $2d.$ The Regulations prescribed by the Department under the above Act are contained in the Department's leaflet No. 15, copies of which may be obtained, free of charge, from

The Secretary,
Department of Agriculture and
Technical Instruction for Ireland,
Upper Merrion-street, Dublin.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET, DUBLIN,

No. 25629/08

16th September, 1908.

BEE PEST PREVENTION (IRELAND) ACT, 1908.

SIR,

I have to transmit, for the information of the County Council, the accompanying copy of the Bee Pest Prevention (Ireland) Act, 1908, which will come into operation on 1st January, 1909.

Under Section 1 any person who has bees affected or suspected of being affected with Foul Brood is bound, under a penalty of £5, to notify the fact to the Local Authority. By Sections 2 and 3 powers are conferred on any duly authorised officer of the Local Authority, or of the Department to enter any premises on which bees are kept, and, where considered necessary, to require the destruction of all affected stock and articles and appliances used in connection with bee-keeping. Any person who refuses to allow any such officer to enter premises on which bees are kept, who obstructs any such officer in the discharge of his duty, or who fails to comply with the notice requiring him to destroy the bees, articles and appliances mentioned therein, is liable to a penalty of £10 for each offence.

Compensation may be paid to the owners of the bees, &c., so destroyed in accordance with a scale to be prescribed by the Department; but no such compensation shall be paid until the Local Authority have passed a resolution consenting generally to the payment of compensation in accordance with the provisions of Section 6. In this connection it may be pointed out that under Section 10 (2), in the case of the Council of a County other than a County Borough, the expenses incurred in the execution of this Act, including compensation, must be defrayed out of the funds available for the purposes of agriculture and other rural industries in the county.

Section 9 empowers a Local Authority, with the consent of the Department, to appoint one or more officers, for the purpose of the execution of the Act, having such qualifications and upon such terms as to remuneration and otherwise as the Department approve. The Department, however, do not at present consider it necessary that any officers should be appointed specially for this purpose, as they are of opinion that the Act can be enforced, without any additional expense, through the Agricultural and Horticultural Instructors employed by the County Committees of Agriculture. In the event of it becoming advisable at a later stage to appoint a special officer for the purposes of the Act, it will be found economical for two or three counties adjoining each other to concur in the appointment of one individual.

The Department desire to direct the attention of your Council to Section 11, which provides that the powers and duties of the Council of every county, other than a County Borough, under the Act shall be exercised and discharged by and through the County Committee of Agriculture.

It will be observed from Section 12 that any penalties recovered under the Act by the Local Authority shall be paid to such Authority, and shall be applied by them in aid of their expenses in the execution of the Act.

I have to add that the Department propose at an early date to issue Regulations under Section 8, and in the meantime they will be glad to be informed whether your Council propose to adopt a resolution consenting generally to the payment of compensation in every case to which Section 6 applies.

I am,

Sir,

Your obedient Servant,

T. P. GILL,

Secretary.

The Secretary of each County Council.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET, DUBLIN,
18th September, 1908.

No. 25629/08.

BEE PEST PREVENTION (IRELAND) ACT, 1908.

SIR,

I have to transmit, for the information of your Council, the accompanying copy of the Bee Pest Prevention (Ireland) Act, 1908, which will come into operation on 1st January, 1909.

Under Section 1 any person who has bees affected, or suspected of being affected with Foul Brood is bound, under a penalty of £5, to notify the fact to the Local Authority. By Sections 2 and 3 powers are conferred on any duly authorised officer of the Local Authority or of the Department to enter any premises on which bees are kept, and, where considered necessary, to require the destruction of all affected stocks and articles and appliances used in connection with bee-keeping. Any person who refuses to allow any such officer to enter premises on which bees are kept, who obstructs any such officer in the discharge of his duty, or who fails to comply with the notice requiring him to destroy the bees, articles and appliances mentioned therein, is liable to a penalty of £10 for each offence.

Compensation may be paid to the owners of the bees, &c., so destroyed in accordance with a scale to be prescribed by the Department; but no such compensation shall be paid until the Local Authority have passed a resolution consenting generally to the payment of compensation in accordance with the provisions of Section 6. In this connection it may be pointed out that under Section 10 (2), in the case of the Council of an Urban District or County Borough, the expenses incurred by a Local Authority in the execution of this Act, including compensation, shall be

defrayed out of any rate or fund applicable to the purposes of the Public Health (Ireland) Acts, 1878 to 1907, as if incurred for these purposes.

Section 9 empowers a Local Authority, with the consent of the Department, to appoint one or more officers, for the purpose of the execution of the Act, having such qualifications and upon such terms as to remuneration and otherwise as the Department approve.

It will be observed from Section 12 that any penalties recovered under the Act by the Local Authority shall be paid to such Authority, and shall be applied by them in aid of their expenses in the execution of the Act.

I have to add that the Department propose at an early date to issue Regulations under Section 8, and in the meantime they will be glad to be informed whether your Council propose to adopt a resolution consenting generally to the payment of compensation in every case to which Section 6 applies.

I am,

Sir,

Your obedient Servant,

T. P. GILL,

Secretary.

To the Secretary or Clerk of each County Borough and each Urban District Council.

AGRICULTURAL SCHEMES.

The undermentioned schemes for 1908-9 have been issued. Copies may be procured free of charge on application to the Offices of the Department:—

- Scheme No. 1.—For encouraging improvement in the breeds of Horses.
- „ No. 2.—For encouraging improvement in the breeds of Cattle.
- „ No. 3.—For encouraging improvement in the breeds of Swine.
- „ No. 4.—Loans for the purchase of Stallions.
- „ No. 5. „ „ Bulls.
- „ No. 6.—Subsidies to Agricultural Societies, etc.
- „ No. 7.—Prizes for Cottages and Small Farms.
- „ No. 8.—Flax.
- „ No. 9.—Instruction in Agriculture.
- „ No. 10.—Winter Agricultural Classes.
- „ No. 11.—Poultry-keeping.
- „ No. 12.—Tutorial Classes in Poultry-keeping.
- „ No. 13.—Butter-making.
- „ No. 14.—Horticulture and Bees.

II.--TECHNICAL INSTRUCTION.

CIRCULAR 57.

DEPARTMENT OF AGRICULTURE AND

TECHNICAL INSTRUCTION FOR IRELAND,

UPPER MERRION-STREET,

DUBLIN, *July*, 1908.

SIR *or* MADAM,

The question of the liability of School Managers and Teachers in cases of accidents to pupils in attendance at their schools has been brought under the notice of the Department in connection with a recent action at law in which damages were recovered from a Teacher on account of injuries received by one of his pupils in consequence of a dangerous substance, used for scientific experiments, having carelessly been left in the way of the school pupils.

The Department understand that the responsibility of Teachers in cases of mishaps would depend on many varying circumstances, and that it is not therefore possible to state in more than general terms the nature and extent of a Teacher's liability. They have been advised, however, that Teachers may be held accountable for the accidents which might occur as a result of allowing dangerous substances to be within the reach of boys and girls so young as to be likely to deal with them in a manner causing injury, or for injuries which might ensue as a result of negligence in allowing such pupils to perform dangerous experiments without providing reasonable safeguards against accident. In such cases it would appear possible that responsibility might be brought home to Technical Instruction Committees or School Managers by whom the Teachers may be employed.

It has been considered desirable by the Department to make these facts generally known to Committees of Management in order that all Teachers may be made aware of their responsibility, and that every possible precaution may be taken to guard against accidents to the pupils under their care.

I am, Sir, *or* Madam,

Your obedient Servant,

T. P. GILL, *Secretary*.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET, DUBLIN.

METROPOLITAN SCHOOL OF ART, DUBLIN.

TEACHERSHIPS-IN-TRAINING, 1909.

The Department will offer for competition, at the beginning of the session 1909-10, three Teacherships-in-Training tenable at the Metropolitan School of Art, Dublin. One will be open to competition amongst male candidates only, and one amongst female candidates only; the third will be open to competition amongst both male and female candidates.

The object of the Teacherships-in-Training is to encourage capable Art students to undertake such a course of training as will enable them to become Art Teachers.

The Teacherships-in-Training will entitle the holders to free admission to all the day and evening classes at the Metropolitan School of Art for the Session 1909-10; a maintenance allowance of 21s. per week during the session (about forty weeks); and third-class railway fare for one journey to and from Dublin.

The Teacherships will be awarded partly as the result of an examination, and partly for works submitted according to the conditions stated below.

The examination will be confined to Art subjects, and will be held at the Metropolitan School of Art, Dublin, on Wednesday, Thursday, and Friday, the 30th June, and 1st and 2nd July, 1909.

Candidates must themselves bear any expenses incurred by them in connection with attendance at the examination.

Candidates who have held Scholarships at the Metropolitan School of Art extending over more than one School Session will not be eligible for the award of Teacherships-in-Training.

Teacherships will not be awarded to candidates who do not show in the course of the examination that they are capable of taking full advantage of the instruction provided at the Metropolitan School of Art, and in particular, candidates with physical defects of voice, sight, or hearing, will not be regarded as eligible. In awarding the Teacherships preference will be given to candidates who possess the Art Class Teachers' Certificate (Board of Education), or the Irish Secondary Teachers' Honours Drawing Certificate.

The award will be made on the following conditions:—

(1.) Candidates must be not less than eighteen and not more than thirty years of age on the 1st September, 1909. The Department may allow a modification of this rule in special cases.

(2.) Successful candidates will be required to furnish a medical certificate of health, an authenticated copy of certificate of birth, and satisfactory testimonials from two responsible persons.

(3.) Candidates must satisfy the Department that they have had a good general education.

(4.) Candidates must have been born in Ireland, or have been resident in Ireland for three years prior to the 1st September, 1909.

(5.) Successful candidates will be required to prepare, in conjunction with the Headmaster of the School, a scheme of study; and to submit it for the Department's approval. They will be required to devote their whole time to the work of this scheme; to attend regularly and punctually; and generally to comply with the regulations set out in the programme of the Metropolitan School of Art. They must be prepared, if required, as part of their training, to undertake such work as teachers as the Headmaster may prescribe.

(6.) The Teacherships may be renewed for a second Session. Renewal will depend upon the ability and application shown by the student during the previous Session, and on the scheme of study proposed by the student when applying for renewal for a second Session.

(7.) The Department reserve the right at any time to determine, without notice, any Teachership upon being satisfied that its continuance is for any reason undesirable.

(8.) The decision of the Department in all questions arising in connection with Teacherships shall be final.

(9.) The Department do not undertake to employ Teachers, nor to find employment for them, at the close of the period of training.

The names of the candidates must be forwarded, on Form S. 3, so as to reach the Offices of the Department not later than the 30TH APRIL, 1909. Applications for forms are not regarded as applications for admission to the examination. Only those candidates who present an official acknowledgment of the form of application will be admitted to the examination room.

Copies of Form S. 3 may be obtained, after 1ST FEBRUARY, 1909, upon application to the Secretary, Department of Agriculture and Technical Instruction for Ireland, or to the Registrar, Metropolitan School of Art, Kildare-street, Dublin.

SUBJECTS OF EXAMINATION.

The subjects and time-table of the examination will be:—

First Day, Wednesday, 30th June—

10 a.m. to 2 p.m.—Drawing from the Antique. (100 marks.)

3 to 4 p.m.—Geometrical Drawing (Art). (50 marks.)

Second Day, Thursday, 1st July—

10 a.m. to 1 p.m.—Drawing in Light and Shade from a Cast. (50 marks.)

2 to 4 p.m.—Perspective. (50 marks.)

4.15 to 5.15 p.m.—Drawing on the Blackboard. (50 marks.)

Third Day, Friday, 2nd July—

10 a.m. to 2 p.m.—Drawing, or Modelling, Design. (100 marks.)

3 to 5.30 p.m.—Model Drawing. (50 marks.)

For syllabuses of the subjects of examination, see "Syllabuses and Lists of Apparatus" of the Board of Education for 1908-9, to be obtained (price 4*d.*), either directly, or through any bookseller, of Mr. E. Ponsonby, 116, Grafton-street, Dublin. [Drawing from the Antique (page 193); Geometrical Drawing (Art), page 189; Drawing in Light and Shade from a Cast, page 187; Perspective, page 190; Drawing on the Blackboard, page 189; Drawing Design (Stage 1), page 199; Modelling Design (Stage 1), page 205; Model Drawing, page 185.]

WORKS.

In order to encourage Art students to devote much attention to what should be the primary aim of their higher instruction, namely, the application of their skill, experience, and good taste to works requiring more time and care than the ordinary conditions of an examination room permit, marks, to a maximum of 225, will be awarded for works of the same character as those proposed for the Irish Secondary Teachers' Honours Drawing Certificate. (*See extract below.*)

Works to be submitted for the competition must be delivered at the Metropolitan School of Art, Dublin, on or before Saturday, the 26th June, 1909. They should be addressed, "The Registrar, Metropolitan School of Art, Dublin," and should be specially marked, "Works, Teacherships-in-Training."

Extract from Circular 16 (Irish Secondary Teachers' Drawing Certificate).

WORKS.

(1.) "An imperial sheet of three designs, based on a study in colour of a growing plant. The plant should be drawn from nature simply and directly—not pictorially represented. Such details of the plant as the student may select for the purposes of the designs should, if required, be drawn separately.

"The designs must occupy, in a decorative way, a square, a circle, and an oblong, one being in monochrome, one in two colours, and one in polychrome. At least one of the designs must be executed in body colour or tempera. In each case the plant must be not merely applied to the given space, but treated in accordance with decorative conditions.

(2.) "A modelled study of a flowering plant, with three distinctly different modelled designs for patterns based on it. Each of these three different designs must be suited to the technical requirements of three different processes of manufacture. The process and material for which it is intended must be named on

each design. The four studies to be on a panel 30 inches by 22 inches.

- (3.) (a.) "A shaded drawing of a complete human figure from the Antique or from Life; or
 (b.) "Shaded drawings of a head, hand and foot, from the Life, full size; *completely finished* in pencil, chalk, or brush in monochrome; or
 (c.) "A modelled figure in the round, 30 inches high, from the Antique or from Life; or
 (d.) "A modelled head, from Life, full size."

FORM S. 206.

DEPARTMENT OF AGRICULTURE AND
 TECHNICAL INSTRUCTION FOR IRELAND,
 UPPER MERRION-STREET, DUBLIN.

TEST FOR ENTRANCE TO THE PREPARATORY COURSE
 IN TECHNICAL SCHOOLS, 1908.

To enable Committees and Teachers to give the certificate required under Section I. (2) of the Department's Programme for Technical Schools and Science and Art Schools and Classes, it may be necessary to require many of the students attending the Preparatory Course in Technical Schools to submit to a test examination. In order to facilitate the arrangements for such examinations, and to indicate to Committees and Teachers the nature and extent of the test which is thought desirable, the Department have prepared papers, supplies of which will be sent on application.

In cases in which it is proposed that the Department's entrance test should be availed of, the examinations will be held on Friday, 16th October. The subjects and time-table of the examinations will be:—

English,	7.30 to 8.45 p.m.
Arithmetic,	8.45 to 10 p.m.

Applications for supplies of the examination papers must be forwarded so as to reach the offices of the Department not later than Wednesday, the 14th October; the papers will be despatched so as to reach the person named as Custodian of Paper on the morning of the day of the examination.

The Committee will be required to provide answer books and other materials required for the examination, and to arrange for the marking of the answer books. It will be necessary, however, to retain the revised answer books for twelve months after the date of the examination, in order that they may be available if required for inspection by officers of the Department.

NOTES AND MEMORANDA.

A meeting of the Agricultural Board was held at the offices of the Department, Upper Merrion-street, Dublin, on Wednesday, the 29th July, 1908. The following were present:—The **Meetings of the Boards:—** **Agricultural Board.** Right Hon. T. W. Russell, M.P., P.C., Vice-President of the Department, in the chair; Mr. Alexander L. Clark, J.P.; Very Rev. Canon Daly, D.D.; Mr. Robert Downes, J.P.; Colonel N. T. Everard, H.M.I.; Most Rev. Denis Kelly, D.D., Lord Bishop of Ross; Mr. William M'Donald, J.P.; the Right Hon. Lord Monteagle, K.P., D.L.; Mr. P. J. O'Neill, J.P.; and Mr. Alexander Robb, J.P.

Mr. T. P. Gill, Secretary of the Department; Mr. J. R. Campbell, B.Sc., Assistant Secretary in respect of Agriculture; Mr. W. G. S. Adams, M.A., Superintendent of the Statistics and Intelligence Branch; Mr. J. S. Gordon, B.Sc., Chief Agricultural Inspector; Mr. J. P. Walsh, Clerk in Charge of Accounts; Mr. J. D. Daly, M.A. (who acted as Secretary to the meeting); and Mr. J. V. Coyle, were also present.

The Board had under consideration the following county and other schemes for the year 1907-8, as revised in the light of the experience gained by the County Committees during the past year, and, as regards the live stock schemes, in consultation with the Advisory Committee:—Live stock, agricultural instruction, agricultural classes, poultry-keeping, butter-making, horticulture and bee-keeping, cottage and farm prizes, subsidies to shows, flax cultivation. The proposals having been discussed, the Board concurred in the application of funds for the purposes of the schemes.

The Board made provision for the maintenance, during the coming year, of the agricultural stations and schools working in connection with the Department, and for the instruction of girls at schools of rural domestic economy.

Arrangements were made for the continuance of Agricultural Scholarships at the Royal College of Science, and for the maintenance of the Department's Forestry Station at Avondale.

The following, among other matters, were also under consideration:—Special investigations (flax, barley, wheat, tobacco, early potatoes, &c.), the marketing of Irish produce in Great Britain, and proposals relating to inland fisheries.

A meeting of the Board of Technical Instruction was held on Wednesday, the 19th August, 1908, at the

The Board of Technical Instruction. offices of the Department, Upper Merrion-street, Dublin. The following were present:—The Right Hon. T. W. Russell, M.P., P.C., Vice-President of the Department, in the chair; Mr. R. W. Booth, J.P.; Mr. Christopher J. Dunn, J.P.; Mr. T. C. Harrington, M.P.; Professor John Joly, B.A.L., Sc.D., F.R.S.; Alderman Michael Joyce, M.P.; Very Rev. P. J. Lally, P.P.; Mr. Abraham Lyon, J.P.; Mr. William Macartney, J.P.; Mr. Patrick J. Magee; Most Rev. Richard A. Sheehan, D.D., Lord Bishop of Waterford and Lismore; and Mr. Alexander Taylor.

Mr. T. P. Gill, Secretary of the Department; Mr. George Fletcher, Assistant Secretary in respect of Technical Instruction; Mr. J. D. Daly, M.A. (who acted as Secretary to the meeting); and Mr. A. Kelly, were also present.

Technical Instruction Schemes in respect of the session 1908-9 for the following urban and county areas were considered:—*Urban*: Armagh, Athlone, Ballymena, Ballymoney (Joint Urban and Rural), Banbridge, Bangor, Blackrock, Bray, Carrickfergus, Clonmel, Coleraine, Galway, Holywood, Kingstown, Larne, Lurgan (Municipal Scheme), Lurgan (Convent Scheme), Newry, Newtownards, Pembroke, Portadown, Tralee, Warrenpoint, Wexford.

Counties: Antrim, Armagh, Clare, Cork, Donegal, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, Kilkenny, King's County, Leitrim, Limerick, Meath, Roscommon, Sligo, Tipperary (Joint Urban and Rural), Tipperary (N.R.), Tipperary (S.R.), Tyrone, Waterford, Wexford, Wicklow.

The schemes having been discussed and approved, the Board concurred in the application of grants in aid thereof from the funds of the Department.

The following, among other matters, were also considered:—Summer Courses for Teachers; Higher Schools of Domestic Economy; Killarney School of Housewifery; Commercial and Industrial Scholarships; Attendance of Apprentices at Technical Schools; Exhibits of Irish Art Work in London.

At the competition for Science and Technological Scholarships and Teachers-in-Training, tenable at the Royal College of Science for Ireland, held on the 30th June and 1st and 2nd July, sixty-one candidates presented themselves.

The awards were as follows:—

Scholarships.—M'Alonan, David, of The Academy, Ballymena; M'Whinney, Wilson Charles, of Mountjoy School, Dublin; M'Kenna, Peter A., of the Christian Brothers' Schools, Our Lady's Mount, Cork; Gilmour, John James Alexander, of The Academy, Ballymena; M'Nally, Maurice Joseph, of the Christian Brothers' Schools, Youghal.

Teacherships-in-Training.—Morrow, Genevieve Violet, of Alexandra College, Dublin; Hayes, Denis, of the Christian Brothers' Schools, Our Lady's Mount, Cork; M'Kinley, Harold Creighton, of Mountjoy School, Dublin; Wakely, William Morrison, of Mountjoy School, Dublin; Spence, Alexander, of the Methodist College, Belfast.

A Scholarship is of the value of £50 per annum, and, in addition, entitles the holder to free instruction during the Associate Course, and third class railway fare for one journey each Session to and from Dublin.

A Teachership-in-Training entitles the holder to free instruction during the Associate Course, a maintenance allowance of 21s. per week for the Session of about forty weeks each year, and third class railway fare for one journey each Session to and from Dublin.

There were twenty-six applicants for the six Industrial Scholarships offered by the Department. The Industrial Scholarships were awarded to the following:—

Dunne, James J., of Ovoca, County Wicklow; Cunningham, David, of Tralee; Murray, Thomas W., of Galway; Twohig, John P., of Cork; Cairns, Robert, of Belfast; Coulter, John W., of Belfast.

Industrial Scholarships are of the value of £80 each, and are renewable for a second and third year at the discretion of the Department. The object of these Scholarships is to enable selected persons (who must already have been engaged in one of the branches of an industry) to take such a course of instruction in

that industry, in an institution providing special advanced courses, as will enable them to undertake the management of an industry in Ireland at the termination of their instruction.

Three open Scholarships, one of the value of £20, and two of the value of £10, for one year are offered at the Bedford College for Women (University of London) for the course of training for Secondary Teachers, beginning

**Open Scholarships
for Women.**

in January, 1909.

The Scholarships will be awarded to the best candidates holding a Degree or equivalent in Arts or Science.

Applications should be sent not later than December 9th, to the Head of the Training Department, Bedford College for Women, York-place, Baker-street, London, W., from whom the necessary forms and particulars can be obtained.

It is pleasing to note that the Spring Mackerel Fishery of 1908 showed a great improvement on those of the past couple of years. The downward tendency since 1903 seemed to indicate a collapse of the industry, but the take of the present year was 236,000 cwts., being about

**The Irish Spring
Mackerel Fishing.
1908.**

100,000 cwts. more than that of the previous season. There was an increase in money value of over £18,000. The mackerel on the south coast, too, were larger in size, and were more like the fish that were common in former years. At Kinsale, Baltimore, Valentia, and Roundstone the landings were double those of 1907. A great deal of the improvement must, of course, be attributed to the difference in the weather conditions of both years, the spring of 1907 being cold and stormy, while that of 1908 was, particularly towards the end of it, fine.

The curing of spring fish for the American market this year was extensive, and a number of fresh stations were opened for the purpose.

As has been the case for the past few years, a Norwegian firm at Cleggan, Co. Galway, pursued the mackerel-curing industry this spring.

The interchange of telegraphic intelligence between the stations was carried out by the Department during the season, as a result

of which the following points of interest were revealed :—

At Kinsale the season opened with favourable weather, but the average take per night for the seventeen boats fishing during the week ended 11th April was only 2·9 hundreds. The second and third weeks of the fishery were more successful, producing 6,636 hundreds. During this period over eighty boats were engaged. The average take per night for each boat was between 8 and 9 hundreds. In the following fortnight ended 9th May, the total amount landed was only 2,206 hundreds, but as the number of boats fishing had fallen to about thirty, the average catch per boat was somewhat greater. In the ensuing week the number of boats fishing increased to fifty-five, but, although the weather is reported to have been favourable, the total catch only amounted to 832 hundreds, or 3·78 hundreds per boat each night. The week ended 23rd May gave better results, as forty-eight boats fishing four nights landed 3,688 hundreds, or an average of 19·21 hundreds per boat each night. The fishing further improved in the last week of May, when 6,210 hundreds were taken by forty boats fishing five nights. This is the largest quantity of fish landed during any one week of the Spring Mackerel season of 1908 on any part of the Irish coast. The fishing was well maintained in June, over forty boats working during the first fortnight; in the third and fourth weeks the numbers were, respectively, twenty-five and thirty. The catch during the first three weeks varied between 2,000 and 3,000 hundreds. In the last week 1,351 hundreds were landed. Prices at the commencement of the season were 20s. per hundred, but dropped to 11s. by the end of April. In May they ranged from 15s. to 7s., and in June the average was between 7s. and 6s. per hundred.

At Union Hall the fishing was not of much importance until the week ended 18th April, when twenty boats fishing four nights landed 522 hundreds. In the ensuing week 841 hundreds were landed by twelve boats fishing for five nights. The week ended 2nd May afforded only one night's fishing, the capture averaging 11 hundreds for each of the eighteen boats engaged. The best takes were made during the last fortnight in May, when over 7,000 hundreds were landed. The number of boats engaged at this period was from twenty to fourteen, and their average capture per night for each boat varied from 38 to 60 hundreds. The fishing was well sustained in June by from sixteen to twenty boats, and during the first three weeks of the month the quantity landed

each week exceeded 2,000 hundreds. The last week of June, however, produced only 586 hundreds, which were taken by twenty boats fishing three nights. Prices in April ranged from 16*s.* to 8*s.* per hundred; in May from 9*s.* to 3*s.*, and in June from 5*s.* to 3*s.*

At Baltimore there was no considerable fishing until the week ended 18th April, when thirty boats fishing four nights landed 1,620 hundreds. In the next week the number of boats fishing increased to forty, and the take to 2,290 hundreds. The captures during the week ended 2nd May were small, as the unfavourable weather permitted of only one night's work. In the following week twenty boats fished four nights and took 1,262 hundreds, or an average of 15·8 hundreds per boat for each night. During the last three weeks of May the fishing steadily improved, the weekly captures being 3,760, 4,575, and 5,473 hundreds. The number of boats fishing at this period was from forty to thirty-two, and the average take per night for each was from 24 to 36 hundreds. The weather in June was favourable, and the boats fished five nights a week for the first three weeks and four nights for the last week of the month. The average weekly take during the former period was over 4,000 hundreds. The best week was that ended June 20th, when twenty-four boats fishing five nights landed 5,470 hundreds, or an average of 45·6 hundreds per boat for each night's work. In the final week of June, 2,638 hundreds were captured by thirty boats fishing four nights. At the opening of the season prices were as high as 20*s.* per hundred, but the quantity of fish for sale was inconsiderable. During May, prices ranged from 14*s.* at the beginning to 5*s.* at the end of the month. Prices in June were from 5*s.* to 4*s.* per hundred.

At Castletownbere the season was again poor, there being little or no fishing until the last week of May. In that week four boats working on four nights landed 545 hundreds. During June the number of boats fishing was from five to eight, and the average take per night for each was from 24 to 40 hundreds. The most successful week was that ended 20th June, when eight boats fishing five nights captured 1,610 hundreds. The best price was 12*s.* per hundred, which was given in April, but the number of fish was small. The price at which the majority of the fish sold was 5*s.* per hundred.

At Valentia the first considerable captures were made in the week ended 25th April, when thirteen boats fishing four nights landed 1,994 hundreds, or 38·4 hundreds per boat for each night. During the first three weeks of May the number of boats increased to twenty-six, but owing to unfavourable weather their efforts were not very successful. The last two weeks of the month were more productive, 1,428 and 2,072 hundreds having been landed. In June, from thirty-two to thirty-five boats fished, with an average catch per night for each of from 11·8 to 18·6 hundreds. The best week of the season was that ended June 6th, when thirty-three boats fishing five nights landed 3,067 hundreds. In April the price per hundred was from 17s. to 10s. In May prices opened at 10s., then rose to 15s., and at the end of the month fell to 5s. In June they varied from 8s. to 5s. per hundred.

At Fenit the season lasted seven weeks, but only two boats fished, and the total quantity of fish landed was very small. The last two weeks of May and the first week of June were the most productive, the weekly catches being, respectively, 160, 110, and 192 hundreds. Prices at the commencement of May were about 17s. to 28s. per hundred, but fell to 12s. at the end of the month. In June, prices were 10s. and 9s. per hundred.

At North Arran, six boats fishing for six nights landed 47 hundreds in the week ended 11th April. The next week's landings were insignificant, amounting only to 8 hundreds. This was followed by a slight improvement in the week ended April 25th, when 99 hundreds were landed by eleven boats fishing five nights. During the first three weeks of May only 82 hundreds in all were landed. The last two weeks of the month were more successful, the landings amounting to 371 and 458 hundreds, respectively, or an average per boat per night of 15·5 and 9·5 hundreds. During the first week in June thirteen boats were fishing, and their catch for five nights' work was 823 hundreds, or 12·7 hundreds per boat per night. In the second week the number of boats fell to nine, but the average catch per boat per night was slightly greater. The best average catch was in the week ended June 20th, when eleven boats fishing three nights produced 785 hundreds, or 23·8 hundreds per boat per night. The greatest actual take was in the week ended 27th June, when fifteen boats fishing five nights captured 1,037 hundreds. At the opening of the season the price was 10s. per hundred, and for a

short time towards the end of April and beginning of May it reached 15s. During the greater part of May prices were between 7s. and 8s. In June they fell to 6s. 6d., and later to 6s. 3d. per hundred.

At Roundstone the season opened with one night's fishing in the week ended 2nd May, but only 5 hundreds were landed by the four boats engaged. The weather in the following week was unfavourable, and on one night, of thirteen boats that put out to sea only three could fish. The last three weeks of the month were more favourable and from ten to eleven boats were at work, their weekly captures amounting to 98, 473; and 685 hundreds. The fishing further improved in June, 826 hundreds having been landed by eleven boats fishing five nights in the first week of the month. The total weekly captures for the remainder of the month were 829, 696, and 824 hundreds. The number of boats working varied between ten and fifteen. Prices during May were 8s. per hundred, falling to 7s. 6d. at the close of the month. Throughout June the price remained stationary at 6s. 6d. per hundred.

At Uleggan, ten boats worked two nights during the week ended 25th April, and landed 485 hundreds. For the next three weeks this figure was not reached although the number of boats had increased to twenty-five. There was a further increase in the number of boats in the week ended 23rd May, but the total catch only amounted to 561 hundreds, or 6·2 hundreds per boat per night for the three nights' fishing. In the last week of May twenty boats worked for four nights and landed 389 hundreds. There was a marked improvement in June. During the first week of that month 1,364 hundreds were landed by twenty boats fishing five nights, and in the second week 1,139 hundreds by twenty-three boats fishing four nights. The number of vessels then dropped to thirteen, and their catch for five nights' fishing in the week ended June 20th was only 365 hundreds, or 5·6 hundreds per night per boat. In the last week of June sixteen boats fished for six nights and landed 930 hundreds, or 9·7 hundreds per night per boat. In April and the first half of May prices were from 11s. to 12s. 6d. per hundred, and during the latter half of May from 8s. to 9s. per hundred. In June they ranged from 7s. to 6s.

Details of the fishing will be found at pp. 164-167.

The Spring and Summer Herring Season of this year, which resulted in the landing of nearly 127,000 cwts., valued at £56,721, showed an improvement of over 30,000 cwts. and £16,500 on the similar season of 1907.

The increase took place largely at the Howth, Dunmore East, Kinsale, Killybegs and Buncrana stations. At the latter two, which are on the Donegal coast, it was largely due to the great number of steam drifters that came for the fishing from ports in Great Britain. Buncrana alone was the headquarters of over 130 of these vessels.

The number of barrels of herrings cured amounted to 23,235, being 7,427 more than during the previous season. This fish was almost all despatched to foreign markets. The curing, with the exception of about 200 barrels, was confined to the Donegal coast. Although a large part of the season's catch was made by boats other than Irish, the proportion of local hands employed in the curing greatly increased. On the East coast the very fine calm weather that prevailed interfered with the fishing, as the sailing boats frequently found it impossible to reach port with their catches in time for the markets; and in the early season a large portion of the fish caught was of very poor quality.

The interchange of telegraphic intelligence between the stations was carried out by the Department during the season, as a result of which the following points of interest were revealed:—

At Howth the fishing commenced in the latter part of May, but it was not until July that any large captures were made. During that month the number of boats engaged varied from twenty-seven to thirty-eight. The best week's fishing was that ended 25th July, when thirty-eight boats fishing four nights landed 1,631 mease. The total quantity of fish taken was 5,413 mease as compared with 2,736 mease in the season before. The best price paid during the season was 21s. 6d. per mease for a small quantity taken in the first week of June. The majority of fish taken sold at from 19s. to 9s. per mease. The weather during July, when fishing was good, was not very favourable, being at times too calm, at others, stormy.

At Arklow, fishing was carried on during the latter part of June and throughout July. The total quantity taken was about 197 mease. In June, 40s. per mease was paid for a small quantity, but the average price was much lower.

At Dunmore East the total catch was 2,548 mease as compared with 784 mease in the previous season. Fishing commenced in the week ended 18th April, and lasted well into July. The most successful weeks were those ended 9th May and 16th May, when 655 and 470 mease, respectively, were landed. The number of boats varied, but on several occasions fourteen were engaged. The best price paid was 15s. 10d. per mease at the close of the season, and the lowest 5s. 3d. during the heavy fishing in May. The average price was about 12s. 6d.

At Helwick Head one boat fished for one night in the week ended 23rd May, but only took 1 mease. There was no further fishing until the last week of June and beginning of July, when from twelve to fourteen boats were engaged, the total catch, however, only amounted to 43 mease. The season ended on July 11th, the last week's fishing being unproductive although twelve boats worked on three nights. Prices throughout the season were 25s. per mease.

At Kinsale fishing commenced on 1st May and continued until the end of June. The weather was, on the whole, favourable and the quality of the fish good during the latter part of May and throughout June. The total catch for the season was 3,510 mease, two weeks in June producing over 900 mease each. In the previous year the total catch for the season amounted to only 500 mease. The most successful week was that ended 13th June, when eight boats fishing five nights landed 967 mease, or an average of 24 mease per boat per night. Prices during May were from 5s. to about 10s. 6d. per mease, and in June from 11s. to 17s.

At Union Hall 370 hundreds were taken in mackerel nets during the months of April, May, and June. The average price was about 2s. per hundred.

At North Aran 301 hundreds were taken in February and March; they were for the most part small and sold at from 2s. to 2s. 3d. per hundred.

At Killybegs 2,958 crans were taken as compared with 376 crans in the previous season and 105 crans in the season of 1906. Practically all the fish were captured during the months of April and May; boats made small captures in June, but the fishing in July was a failure. The best fishing was that during the week ended 23rd May, when forty boats working five nights landed

1,028 crans. The average weekly landings during April and May—excluding the week mentioned above—were between 200 and 300 crans. The number of boats varied, but on several occasions during the height of the fishing from forty-five to fifty were engaged. Prices during April were from 12*s.* 7*d.* to 24*s.* 3*d.* per cran. In May the lowest price was 17*s.* 1*d.*, and the best 53*s.* 3*d.* per cran. About 455 crans landed in the final week of May sold at the latter price.

At *Kincasslagh* the season opened on 2nd May, one steam drifter fishing for one night and landing 65 crans. During the following week three steam drifters worked for three nights, their total catch being 35 crans. The fish were taken a long distance from land and were of inferior quality, realising only 15*s.* to 16*s.* per cran. The fishing improved both in quality and quantity during the last two weeks of May, the captures being 537 and 260 crans, respectively. In the week ended 6th June, 110 crans were landed, after which fishing ceased. During part of the season as many as forty boats (including ten steam drifters) were engaged. The best price was 60*s.* per cran, and the average, except for the first two weeks of the fishing, was from 40*s.* to 47*s.* 6*d.* per cran.

At *Burtonport* 162 crans were landed during the last three weeks of May and first week of June. Prices varied from 42*s.* per cran at the opening of the season to 64*s.* at the close.

At *Downing's Bay* the total catch for the season was 7,512 crans, which was all cured for exportation. The bulk of the fish was taken during May and the first week of June; the weekly catches varying from about 900 to 1,700 crans. A large number of vessels, including about eighty steam drifters, were engaged, and on one night one hundred and fifty-three boats fished. Prices during May were from about 20*s.* 6*d.* to 46*s.* per cran, rising at the end of the month to 65*s.* In June from 58*s.* to 60*s.* per cran was realised. The weather during the greater part of the month of May was unsettled and the fish held off a considerable distance from land, thus placing the local boats at a disadvantage.

At *Buncrana* there was an improvement in the fishing, the total catch for the season being 4,828 crans as against 2,673 crans in the previous year. About 1,000 crans were taken during February; there was no fishing during March and April. In May several good captures were made, more especially during the

weeks ended the 9th and 23rd, when 1,108 and 1,248 crans, respectively, were landed. The season practically finished in the second week of June, although a few boats continued working up to the end of that month. A large number of steam drifters took part in the fishing, one hundred and thirty-four being engaged at various times during the season. Prices during February were from 12*s.* 6*d.* to 32*s.* per cran, the quality of the fish at times being poor. In May, prices were as low as 26*s.*, rising to 55*s.* 10*d.* at the end of the month. In June they opened at 46*s.* 9*d.* per cran and reached, for a small quantity, 71*s.* per cran.

At *Portavogie* 3,135 mease were landed during the season. Fishing was commenced in April by a few boats, and during May the average number of boats working each week was from ten to thirty-two. In June the number further increased from thirty to forty-four. The fishing was well sustained during July by from twenty-two to thirty-seven boats. The weather was not very favourable owing to calms and fogs. The best capture was made in the last week of July, when thirty-three boats fishing five nights landed 690 mease. A few herrings taken in April fetched 21*s.* per mease: the average prices in May were from 10*s.* to 12*s.* per mease. In June they increased to from 15*s.* 6*d.* to 18*s.* 6*d.*; and in July varied from 18*s.* 6*d.* to as low as 7*s.* 1*d.* per mease at the end of the month.

At *Ardglass* fishing commenced at the end of April, but no captures of any importance were made until the latter part of May. The best week's fishing during that month was 767 mease, which were taken by twenty-six boats fishing five nights. In June there was an improvement both as to quality and quantity, the average weekly landings for the month being over 600 mease. The fishing during July was still more successful, the best week being that ended 11th July, when twenty-five boats fishing four nights landed 1,370 mease. The total catch for the season was 9,030 mease as compared with 7,608 mease in the previous year. Prices during May were from 6*s.* to 12*s.* per mease; in June from 9*s.* 9*d.* to 15*s.* 7*d.* The highest price in July was 18*s.*, and the lowest 8*s.* 1*d.* per mease. Prices were somewhat lower this season owing to the fact that foggy and calm weather was very prevalent, and boats were frequently unable to reach port in time for the special market trains.

At *Kilkeel* two boats commenced fishing in the week ended 9th May, and by the end of the month twelve boats were at work.

During June the weekly average number of boats ranged from eleven to fifteen. No very remarkable captures were made in May and June, the weekly takes being, as a rule, under 200 mease. During July the fishing improved, 653 mease were taken in the week ended 11th July, and in the last two weeks of the month the landings were 463 and 753 mease, respectively. The total catch for the season was 3,515 mease, thus exceeding that of the previous year by some 800 mease. Prices varied from 6s. 1d. to 17s. 11d. per mease, the latter price being paid for an exceptionally good lot landed at the end of June.

Details of the fishing will be found at pp. 168-171.

An exhibition of Irish industries will be held in the Royal Irish Produce at the Horticultural Hall, Westminster, on the "Aonach" in 17th, 18th, 19th, 20th, and 21st November. London. This will be the sixth annual "Aonach" organised by the Gaelic League of London. From being a modest display of Irish goods, the "Aonach" has grown to such an extent that last year it formed a splendid exhibition of all kinds of Irish produce and manufactured goods. Provision is made for a greater expansion this year. Last year there were many exhibits of Irish woollens, linens, cloths, etc., as well as specimens of hand-made lace and other products of home industries. Perhaps the chief feature, however, of the exhibition was the display of agricultural produce, the Department of Agriculture and Technical Instruction for Ireland having organised a composite exhibit, which was displayed on several stands. This year a larger space has been taken by the Department, as it is believed that the "Aonach" demonstrates the excellent character of Irish produce, and the considerable advance that has been made in methods of handling, grading, and packing so as to meet the requirements of dealer and consumer, and is thus an effective means of developing Irish export trade.

According to the Annual General Abstracts of the Agricultural Statistics for Ireland (Cd. 4303-1908), Irish Crops and Herds in 1908. recently published, the main changes in 1908 as compared with 1907 are:—

- (1) a decrease in the area of corn crops, especially barley;

- (2) a decrease in the area of potatoes and an increase in turnips and mangels;
- (3) a marked decrease in the area of flax;
- (4) an increase in the area of hay;
- (5) a large increase in the number of cattle and sheep, an increase also in horses, and a considerable decrease in the number of pigs.

The following summary shows the acreage under the several corn crops in 1907 and 1908:—

—	1907.	1908.	Increase.	Decrease.
	Acres.	Acres.	Acres.	Acres.
Wheat,	38,143	36,662	—	1,481
Oats,	1,075,390	1,060,483	—	14,907
Barley and Bere,	170,431	151,395	—	16,036
Rye,	8,868	8,039	—	829
Beans,	1,835	1,787	—	48
Pease,	324	296	—	28
Total,	1,294,991	1,261,662	—	33,329
Net Decrease, 33,329 Acres.				

The subjoined table shows the area of green crops in 1907 and 1908, and the increase or decrease in the several crops:—

—	1907.	1908.	Increase.	Decrease.
	Acres.	Acres.	Acres.	Acres.
Potatoes,	590,908	587,230	—	3,768
Turnips,	275,002	278,954	3,862	—
Mangels,	67,100	72,078	1,978	—
Beet Root,	32	42	10	—
Carrots,	1,742	1,581	—	161
Paranips,	572	620	48	—
Cabbage,	38,259	39,147	888	—
Vetches,	1,814	1,879	65	—
Rape,	3,377	2,989	—	388
Other Green Crops,	23,994	24,274	280	—
Total,	1,002,980	1,008,794	10,131	4,317
Net Increase, 5,814 Acres.				

The total area of hay in 1908 is returned as 2,302,760 acres, as compared with 2,281,318 acres in 1907—an increase of 21,442 acres, or 0·9 per cent.

The Hay Crop.

As will be seen from the following table, there is a decrease in first year's hay, a considerable increase in second and third year's hay, and a slight decrease in hay from permanent meadow:—

—						First Year's Hay.	Second and Third Year.	Hay from Permanent Meadow.
1907.	...	...	...	...	...	512,666	314,188	1,454,464
1908.	...	...	...	...	...	503,686	345,292	1,453,782
Increase or Decrease.						- 8,980	+ 31,104	- 682
Percentage,						- 1·8	+ 9·8	- 0·0

The area under hay has increased in Ulster, Connaught, and Munster, while Leinster shows a decrease.

The area of pasture, including mountain grazing, is returned as 12,502,286 acres, as compared with **Pasture and Grazing.** 12,433,095 acres—an increase of 69,191.

The great part of this increase is due to a larger area of turf bog, marsh, and mountain being returned as grazed in 1908 as compared with 1907. In this connection it should be remembered that there are certain areas which it is always difficult to classify, and which one year may be returned as “grazed” land, and another year may be returned as turf bog, or barren mountain, but the grazing value of these areas is small, and the important increase or decrease in pasture is the extent to which the area of crops and of hay has increased or decreased.

In 1908 there is a net decrease in the area of corn and green crops, flax, and fruit of 39,573 acres, and an increase in hay of 21,442 acres, leaving a net decrease of 18,131 acres, which may be said to represent the increase in the extent under pasture in 1908, leaving out of account the rough grazing land.

There is an increase in 1908 in horses, cattle, and sheep.

There is also an increase in mules, jennets, and asses. There is a decrease in pigs, goats, and poultry. The following are the

Live Stock. changes in the number of live stock in 1908 as compared with 1907:—

	1907.	1908.	Increase.	Decrease.
Horses,	596,144	604,510	8,366	—
Mules and Jennets,	29,791	30,349	558	—
Asses,	237,540	241,183	3,643	—
Cattle,	4,676,493	4,791,829	115,336	—
Sheep,	3,816,609	4,129,623	313,014	—
Pigs,	1,317,068	1,217,763	—	99,305
Goats,	247,347	246,254	—	1,093
Poultry,	24,326,995	24,030,099	—	296,896

According to a Consular Report (Cd. 3727-178) recently published, relating to the Trade and Commerce of Pomerania, quantities of Irish salted herrings were imported into Stettin, those from Downing's Bay being in great favour owing to their superior quality. There is also apparently a fair demand for Irish lace of authentic origin. Owing to the higher prices charged for the real product purchasers are restricted in number, and are found only among the more wealthy classes. Sets consisting of collars and cuffs cost about 35 marks (£1 14s. 3d.) each. A large collar is sold at 18 marks (17s. 8d.), and a small collar at 7 marks (6s. 11d.). The imitations of Irish lace sold are manufactured at Plauen-in-V. (Saxony). They are entirely machine-made, and are somewhat finer texture than the genuine variety, but almost identical as regards design, and quite white in colour. The imitations are good as regards pattern.

At Hollywood (County Down) Petty Sessions, on the 28th September, the skippers of the trawlers
Illegal Trawling. "Bee," "Lilly," "Lizzie," and "Sun-beam," were fined £1 and £1 costs each for illegal trawling in Belfast Lough.

The second of this season's Surprise Butter Competitions was held on the 8th July, 1908. The judges
Surprise Butter Competitions, 1908-9. were two in number, being representative butter merchants of Belfast and Cardiff.

Prizes were awarded to the undermentioned competitors:—
 Springfield Co-operative Agricultural and Dairy Society, Scottish

Co-operative Wholesale Society (Enniskillen), Tamnaskenny Co-operative Dairy Society, Doons Co-operative Agricultural and Dairy Society, Killeter Co-operative Agricultural and Dairy Society, Leckpatrick Co-operative Agricultural and Dairy Society.

A special additional prize of 10s. was awarded in each case to the dairymaid or actual maker of an exhibit obtaining a first-class prize.

The third competition was held on the 6th August, 1908. The judges were two in number, being representative butter merchants of Glasgow and Limerick. Prizes were awarded to the under-mentioned competitors:—Killeter Co-operative Agricultural and Dairy Society, Bailieborough Co-operative Agricultural and Dairy Society, Ramelton Co-operative Agricultural and Dairy Society, Springfield Co-operative Agricultural and Dairy Society, Drumholm Co-operative Agricultural and Dairy Society, Spamount Co-operative Agricultural and Dairy Society, Tamnaskenny Co-operative Dairy Society.

A special additional prize of 10s. was awarded in each case to the dairymaid or actual maker of an exhibit obtaining a first-class prize.

Exhibits for the 4th and 5th of these competitions were judged on the 23rd September, 1908. Telegrams calling up the exhibits were issued on the 11th and 14th September respectively.

Prizes were awarded to the undermentioned competitors:—

Competition No. 4.—Judged by representative butter merchants of Dublin and London—Leckpatrick Co-operative Agricultural and Dairy Society, Knockavardagh and Moyglass Creamery, Omagh Co-operative Agricultural and Dairy Society, Erne Co-operative Agricultural and Dairy Society, Irvinestown Co-operative Agricultural and Dairy Society.

Competition No. 5.—Judged by representative butter merchants of Cork and Liverpool—Leckpatrick Co-operative Agricultural and Dairy Society, Hollyford Co-operative Agricultural and Dairy Society, Knockavardagh and Moyglass Creamery, Castloughfield Co-operative Agricultural and Dairy Society, Mitchelstown Creamery (Newmarket Dairy Company).

A special additional prize of 10s. has been awarded to the dairymaid at the creamery obtaining the first-class prize.

STATISTICAL TABLES.

FISHERY STATISTICS—

STATEMENT of the Total QUANTITY and VALUE of the FISH returned compared with the

	North Coast.				East Coast.			
	1908.		1907.		1908.		1907.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
Brill, . . . . .	.	.	.	.	19	39	10	18
Soles,	12	48	9	36	60	219	104	508
Turbot, . . . . .	.	.	2	6	26	108	14	50
Total Prime Fish,	12	48	11	42	105	366	128	585
Cod,	2	1	2	3	779	453	834	809
Conger Eel,	1	1	1	1	724	311	730	444
Haddock,	161	75	120	30	655	454	468	486
Hake, . . . . .	.	.	.	.	636	181	570	651
Herrings, . . . . .	.	.	.	.	28,285	7,387	20,117	6,142
Ling, . . . . .	.	.	3	1	667	214	600	344
Mackerel,	68	24	1	1	596	133	786	141
Plaice,	141	103	136	117	1,323	1,465	1,881	2,249
Ray or Skate, . . . . .	.	.	.	.	668	163	737	337
Sprats, . . . . .	.	.	.	.	.	.	.	.
Whiting,	20	9	10	5	1,378	723	1,060	890
All other except Shell Fish,	259	92	235	101	964	509	969	570
Total,	664	353	519	301	36,780	12,659	28,880	13,648
SHELL FISH:—	No.		No.		No.		No.	
Crabs,	23,863	61	29,281	67	23,098	61	98,002	387
Lobsters,	30,721	866	35,551	962	28,642	1,067	5,117	172
Mussels,	Cwts.	.	Cwts.	.	Cwts.	3	Cwts.	4
Oysters,	No.	.	No.	.	No.	.	No.	.
Other Shell Fish,	Cwts.	9	Cwts.	23	Cwts.	60	Cwts.	73
Total, . . . . .	.	936	.	1,052	.	1,191	.	636
Total Value of Fish landed, . . . . .	.	1,289	.	1,353	.	13,850	.	14,284

NOTE.—The above figures are subject to

IRELAND.

as landed on the IRISH COASTS during the month of July, 1908, as corresponding period in 1907.

South Coast.				West Coast.				Total.			
1908.		1907.		1908.		1907.		1908.		1907.	
Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
1	2	1	2	86	171	42	80	106	212	53	100
43	182	48	207	150	410	141	488	265	859	302	1,239
3	11	10	16	51	161	16	57	80	280	42	168
47	195	59	255	287	742	199	625	451	1,351	397	1,507
145	68	95	64	16	7	69	24	942	529	1,000	900
121	37	52	15	11	7	2	1	857	356	785	461
20	24	190	125	301	118	561	243	1,137	701	1,348	884
32	34	46	47	15	8	.	.	683	523	616	698
1,134	314	293	91	103	63	262	147	29,522	7,764	20,672	6,380
108	69	134	80	12	6	36	17	787	289	773	442
9,287	1,754	18,968	4,338	14,460	3,209	22,259	4,651	24,411	5,120	42,014	9,131
169	210	143	187	263	256	500	452	1,806	2,034	2,660	3,065
14	3	13	5	9	2	12	3	691	168	762	345
17	5	67	7	.	.	.	.	17	5	67	7
62	18	30	19	378	137	820	240	1,838	887	1,920	1,154
528	219	549	221	935	402	1,049	452	2,686	1,222	2,802	1,344
11,684	2,950	20,648	5,454	16,790	4,987	25,769	6,855	65,918	20,949	75,816	26,258
No.		No.		No.		No.		No.		No.	
3,217	24	5,163	40	825	4	950	9	51,003	150	133,696	503
9,377	289	12,787	393	46,958	1,339	62,618	1,791	115,698	3,561	116,073	3,321
Cwts.		Cwts.		Cwts.		Cwts.		Cwts.		Cwts.	
.		.		.		.		110	3	170	4
No.		No.		No.		No.		No.		No.	
.		
Cwts.		Cwts.		Cwts.		Cwts.		Cwts.		Cwts.	
230	23	160	15	587	90	662	105	1,082	182	1,291	216
.	336	.	448	.	1,433	.	1,908	.	3,896	.	4,044
.	3,286	.	5,902	.	6,420	.	8,763	.	24,845	.	30,302

correction in Annual Returns.

FISHERY STATISTICS—

STATEMENT of the Total QUANTITY and VALUE of the FISH returned compared with the

	North Coast.				East Coast.			
	1908.		1907.		1908.		1907.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
Brill, . . . . .	.	.	.	.	15	25	7	11
Sole,	11	49	29	166	49	183	120	450
Turbot, . . . . .	.	.	15	50	27	118	15	51
Total Prime Fish, . . .	11	49	44	216	91	326	142	512
Cod, . . . . .	.	.	.	.	560	385	722	301
Conger Eel,	3	1	.	.	484	224	573	232
Haddock,	72	31	109	57	472	333	426	251
Hake, . . . . .	.	.	.	.	477	332	407	368
Herrings,	23	4	99	64	20,084	4,518	21,189	5,408
Ling, . . . . .	.	.	.	.	517	135	538	256
Mackerel,	120	39	22	7	1,388	402	2,482	589
Plaice,	166	123	299	317	1,374	1,363	1,831	1,789
Ray or Skate,	11	3	8	2	581	153	697	240
Sprats, . . . . .	.	.	.	.	.	.	.	.
Whiting,	10	5	20	13	891	481	667	385
All other except Shell Fish, .	129	47	447	183	786	353	1,538	479
Total,	545	302	1,048	859	27,706	9,005	31,212	10,810
SHELL FISH :—	No.		No.		No.		No.	
Crabs,	22,263	47	21,268	49	18,363	50	27,198	94
Lobsters,	28,352	776	20,797	575	12,342	526	13,771	486
Mussels,	Cwts.	.	Cwts.	.	Cwts.	6	Cwts.	12
	.	.	.	.	220		326	
Oysters,	No.	.	No.	.	No.	.	No.	.

Other Shell Fish,	Cwts.	5	Cwts.	11	Cwts.	36	Cwts.	131
	32		76		86		369	
Total, . . . . .	.	828	.	635	.	618	.	723
Total value of Fish landed, .	.	1,130	.	1,494	.	9,623	.	11,538

NOTE.—The above figures are subject to

IRELAND.

as landed on the IRISH COASTS during the month of August, 1908, as corresponding period in 1907.

South Coast.				West Coast.				Total.			
1908.		1907.		1908.		1907.		1908.		1907.	
Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
2	4	2	3	29	52	51	62	46	81	60	76
37	166	64	300	99	277	126	430	196	675	339	1,316
2	10	21	80	69	212	52	193		340	103	374
41	180	87	393	197	541	229	685	340	1,096	502	1,796
69	51	37	17	3	1	.	.	632	437	759	318
95	31	64	28	5	2	18	7	587	258	655	267
21	14	82	66	188	104	510	243	753	482	1,127	617
7	7	22	9	.	.	31	13	484	339	460	390
1,718	306	491	161	601	237	488	212	22,426	5,065	22,267	5,845
98	45	29	12	.	.	16	6	615	180	583	274
5,748	1,247	8,191	1,801	2,798	745	1,702	632	10,054	2,433	12,397	3,029
150	174	213	260	308	241	453	398	1,998	1,901	2,796	2,764
4	1	.	.	48	22	8	3	644	179	713	245
299	50	312	67	.	.	.	.	299	50	312	67
101	24	44	27	111	59	120	70	1,113	569	851	495
648	280	1,062	528	616	287	912	468	2,179	947	3,989	1,658
8,999	2,390	10,664	3,359	4,875	2,239	4,487	2,737	42,124	13,936	47,411	17,765
No.		No.		No.		No.		No.		No.	
3,113	23	7,686	109	718	4	714	6	44,457	124	56,866	259
9,111	272	9,172	293	59,284	1,873	33,988	1,090	109,089	3,447	77,728	2,444
Cwts.		Cwts.		Cwts.		Cwts.		Cwts.		Cwts.	
.	.	.	.	480	16	.	.	700	22	326	12
No.		No.		No.		No.		No.		No.	
.
Cwts.		Cwts.		Cwts.		Cwts.		Cwts.		Cwts.	
220	22	210	21	587	95	761	133	925	158	1,416	296
.	317	.	423	.	1,988	.	1,229	.	3,751	.	3,010
.	2,707	.	3,782	.	4,227	.	3,966	.	17,687	.	20,775

correction in Annual Returns.

FISHERY STATISTICS—

STATEMENT of the TOTAL QUANTITY and VALUE of the FISH returned as compared with the

	North Coast.				East Coast.			
	1908.		1907.		1908.		1907.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
Brill, . . . . .	.	.	.	.	9	14	7	12
Soles,	10	52	4	16	76	270	19	506
Turbot,	1	2	1	1	24	100	19	67
Total Prime Fish,	11	51	5	17	109	384	145	585
Cod,	120	63	2	2	600	532	604	698
Conger Eel,	26	10	19	7	487	276	667	412
Haddock,	32	14	39	27	600	524	554	700
Hake, . . . . .	.	.	.	.	521	496	490	779
Herrings,	3,166	1,755	2,725	1,680	6,028	2,152	11,414	3,161
Ling, . . . . .	.	.	.	.	522	204	620	407
Mackerel,	52	8	112	40	2,116	440	1,757	347
Plaice,	86	62	74	62	1,457	1,682	1,451	1,742
Ray or Skate,	101	30	2	1	654	170	608	223
Sprats, . . . . .	.	.	.	.	.	.	.	.
Whiting,	3	2	29	17	651	512	677	762
All other except Shell Fish,	47	16	397	187	717	394	802	363
Total,	3,644	2,014	3,404	2,040	14,462	7,706	19,789	10,182
SHELL FISH:—	No.		No.		No.		No.	
Crabs,	23,850	52	15,291	33	8,382	27	27,226	104
Lobsters,	20,921	787	18,718	486	3,863	211	6,688	242
Mussels,	Cwts.		Cwts.		Cwts.		Cwts.	
	.	.	.	.	259	9	300	15
Oysters,	No.		No.		No.		No.	
	.	.	.	.	.	.	9,198	14
Other Shell Fish,	Cwts.		Cwts.		Cwts.		Cwts.	
	.	.	28	4	53	34	56	45
Total, . . . . .	.	839	.	523	.	281	.	420
Total Value of Fish landed, . . . . .	.	2,853	.	2,563	.	8,047	.	10,802

NOTE.—The above figures are subject to
 * Includes 15,576 lobsters, value £454, landed at Garnish

IRELAND.

landed on the IRISH COASTS during the Month of September, 1908, as corresponding period in 1907.

South Coast.				West Coast.				Total.			
1908.		1907.		1908.		1907.		1908.		1907.	
Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
7	15	6	11	9	22	27	42	25	51	40	65
37	155	51	225	141	532	121	412	264	1,009	295	1,159
10	36	10	37	55	222	67	222	90	360	97	327
54	206	67	273	205	776	215	676	379	1,420	432	1,551
45	30	11	9	13	8	32	13	778	633	649	722
44	13	34	10	6	2	20	7	563	301	740	436
44	33	76	50	125	72	337	167	801	643	1,006	944
41	43	47	33	520	289	58	21	1,082	828	595	833
2,055	689	2,049	662	6,411	3,890	8,337	3,799	17,663	8,486	24,525	9,305
53	69	25	8	24	11	11	4	599	274	656	419
14,014	3,319	2,687	743	11,050	3,532	832	262	27,232	7,299	5,388	1,392
158	194	228	279	593	492	305	271	2,294	2,430	2,058	2,354
7	3	.	.	19	4	39	16	781	207	649	240
92	14	57	14	.	.	760	106	92	11	817	120
47	20	11	21	628	196	313	115	1,329	730	1,060	915
512	245	1,306	480	313	169	1,151	508	1,589	824	3,656	1,538
17,166	4,868	6,628	2,582	19,910	9,441	12,410	5,965	55,182	24,089	42,231	20,769
No.		No.		No.		No.		No.		No.	
348	3	2,116	42	629	2	868	7	33,209	84	45,501	186
5,145	168	21,892	603	9,122	253	28,587	913	48,051	1,419	75,885	2,334
Cwts.	.	Cwts.	.	Cwts.	.	Cwts.	.	Cwts.	.	Cwts.	.
.	.	.	.	.	.	48	1	259	9	348	19
No.	.	No.	.	No.	.	No.	.	No.	.	No.	.
.	.	3,969	16	504	1	.	.	504	1	13,167	30
Cwts.	.	Cwts.	.	Cwts.	.	Cwts.	.	Cwts.	.	Cwts.	.
466	47	374	39	524	84	538	110	1,043	165	996	198
.	218	.	760	.	340	.	1,064	.	1,678	.	2,767
.	5,086	.	3,342	.	9,781	.	7,029	.	25,767	.	23,536

correction in Annual Returns.
and Dursley during June, July, and August.

(a) IRISH SPRING MACKEREL

No.	Places where Fish are landed.	Collecting Stations.	Date when Fishing may be said to have commenced.	Date when Fishing may be said to have ended.	Quantity captured.
					Cwts.
1	Dunmore East, ...	Dunmore East, ...	—	—	921
2	Ballycotton, ...	Ballycotton, ...	21st April,	27th June,	679
3	Queenstown, ...	Queenstown, ...	April, ...	June, ...	1,046
4	Kinsale, ...	Upper Cove, ...	6th April,	27th June,	44,672
5	Union Hall and Glandore.	Union Hall, ...	7th April,	30th June,	19,000
6	South Reen and Castletownsend.	Castletownsend, ...	15th April,	26th June,	1,780
7	Baltimore, ...	Baltimore, ...	15th April,	30th June,	61,254
8	Schull and Cape Clear,	Schull, ...	21st April,	30th June,	10,020
9	Castletown Berehaven and Pulteen.	Castletown Berehaven.	21st April,	30th June,	8,000
10	Garinish and Dursey,	Garinish and Dursey.	Continued from season until	on Autumn 21st July.	1,930
11	Ballydonegan and Tranterla.	Ballydonegan,			400
12	Ballycrovane, Urman, Cod Head, Gurtobig, Kiloatherine, Derryvegil, Clendria, Gurteen and Travarra.	Ballycrovane, ...	7th March,	23rd May,	920
13	Ballinskelligs, Boolakeel, and Horse Island.	Ballinskelligs, ...	15th April,	26th April,	570
14	Portmagee, ...	Portmagee, ...	21st May, ..	27th June,	3,600
15	Knightstown and Renard Point.	Knightstown, ...	17th March,	30th June,	28,983
16	Cahirciveen, Cooseroom, Coonana, and Renard Point.	Cahirciveen, ...	First week in April.	30th June,	327
17	Dingle and Ballymore,	Dingle, ...	3rd May, ...	30th June,	4,550
18	Dunquin, ...	Ventry, ...	January,	May, ...	951
19	Smerwick, Ballinaraght, Clogher, Dooneen, and Ballydavid.	Ballinagall, ...	1st April,	30th June,	5,877
20	Brandon Creek, ...	Brandon Creek, ...	5th March,	24th June,	2,546
21	Brandon Quay, ...	Brandon Bay, ...	7th April,	30th June,	3,101½
22	Fenit, ...	Fenit, ...	5th April,	17th May,	1,158
23	Kilkee and Killard, ...	Kilkee, ...	3rd March,	30th June,	936
24	Kilronan and Kilmurvy,	North Arran, ...	3rd March,	30th June,	6,866

(a) See page 143.

* Part landed in January, February, &c.
† The fish cured at Dingle includes mackerel

FISHING, 1903. (TABLE NO. I.)

Total approximate Value.	Number of Steamers carrying the Fish to England.	Number of Ice Hulks.	Number of Tons of Ice imported.	Number of Barrels of Fish cured for Ex- portation.	Observations.	No.
£ s. d.						
315 5 3	—	—	—	—	No regular mackerel fishing.	1
213 16 6	—	—	—	—	—	2
374 5 0	—	—	—	—	—	3
12,909 17 0	5	1 and an ice house.	1,180	1,380	•	4
4,154 2 0	—	—	—	5,119	•	5
369 3 6	—	—	—	498	—	6
11,777 14 6	4	1.	680	7,000	•	7
1,810 0 0	—	—	—	2,956	•	8
1,600 0 0	—	—	—	2,276	—	9
727 8 0	—	—	—	552	•	10
145 0 0	—	—	—	115	•	11
372 0 0	—	—	—	260	•	12
230 0 0	—	—	—	—	—	13
1,064 1 6	2	—	—	1,012	•	14
9,170 0 0	1	3	300	6,338	•	15
240 6 0	—	—	—	33	•	16
1,323 8 9	1	—	—	† 3,500	•	17
320 0 0	—	—	—	† 50	•	18
2,130 0 0	—	—	—	† 327	•	19
1,172 1 0	—	—	—	† 40	•	20
1,080 15 0	—	—	—	905	•	21
428 12 6	—	Store on Pier.	300	—	—	22
253 0 0	—	—	—	48	•	23
1,545 8 4	1	1	250	1,183	—	24

before the opening of the regular Spring Season.
landed at Smerwick, Brandon Creek, Dunquin, &c.

(a) IRISH SPRING MACKEREL

No.	Places where Fish are landed.	Collecting Stations.	Date when Fishing may be said to have commenced.	Date when Fishing may be said to have ended.	Quantity captured.
					Cwts.
25	The Weir, Island Eddy, Galway, Barna, Spiddal, and Crumlin.	Galway, ...	Middle of March.	30th June.	1,000
26	Roundstone, ...	Roundstone, ...	1st May, ...	30th June.	7,162
27	Clifden, Dunloughan, and Bunowen.	Clifden, ...	May, ...	30th June.	1,696
28	Cleggan and Inishboffin.	Cleggan, ...	21st April.	30th June.	10,230
29	Rathlacken, ...	Ross, ...	—	—	360
30	Killybegs, ...	Killybegs, ...	—	—	3,240
31	Buncrana, ...	Buncrana, ...	—	—	1,067½
				Total, ...	234,843

* Port landed in January and February, &c.,

(a) IRISH SPRING MACKEREL

Mackerel were also landed at the places set forth below

Collecting Stations.	Places where landed.	Quantity.	Value.	Observations.
		Cwts.	£ s. d.	
Ballinacourty and Helvick Head.	Ballinacourty, Ballinagoul, and Dungarvan.	30½	9 3 0	—
Youghal, ...	Youghal, ...	101	20 8 0	—
Courtmaesherry, ..	Courtmaesherry, ...	1½	1 1 0	—
Crookhaven, ...	Crookhaven, Goleen, and Spanish Cove.	151½	37 7 0	30 Barrels cured.
Bantry, ...	Bantry, ...	13½	8 9 6	—
Waterville, ...	Rineen and Derrynane.	120	42 10 0	23 Barrels cured.
Moveen, ...	Moveen, ...	3	1 17 6	—
Coosheen, ...	Farraby, ...	167½	49 8 9	33 Barrels cured.
Seafield, ...	Seafield and Caher-rush.	147	41 15 0	5 Barrels cured.
Liscannor, ...	Liscannor, Fisher-street, Cream Point, and Bartra.	44½	16 11 8	—
Ballaghahline, ...	Ballaghahline, ...	15	5 12 0	—
South Arran, ...	South Arran, ...	28½	10 2 6	—

(a) See page 143.

FISHING, 1908. (TABLE NO. I.)—continued.

Total approximate Value.	Number of Steamers carrying the Fish to England.	Number of Ice Hulks.	Number of Tons of Ice Imported.	Number of Barrels of Fish cured for Ex- portation.	Observations.	No.
£ s. d.						
475 0 0	—	—	—	42	—	25
1,527 11 6	1	1	200	975	—	26
359 10 0	—	—	—	160	—	27
2,780 0 0	—	1	500	1,276	*	28
144 0 0	—	—	—	—	A Norwegian firm cured 470 barrels.	29
538 12 9	—	—	—	—	All landed in February.	30
143 15 3	—	—	—	—	Taken in herring nets.	31
59,674 9 1	—	—	—	36,325	Do. do.	

before the opening of the regular Spring Season.

FISHING, 1908. (TABLE NO. II.)

which are not included in the foregoing Return.

Collecting Stations.	Places where landed.	Quantity.	Value.	Observations.
		Cwts.	£ s. d.	
Olew Bay,	Olew Bay,	35½	16 10 0	—
Achilbeg,	Achilbeg,	34	17 5 0	—
Keel,	Keel and Keem, ...	52	43 6 8	—
Belmullet,	Belmullet,	17½	32 15 0	—
Belderrig,	Belderrig,	65	13 0 0	—
Raghley,	Raghley,	27	2 10 0	—
Mullaghmore, ...	Mullaghmore, ...	48½	11 0 6	—
Tribane,	Ballysiggart and Casson Cove, ...	60	21 15 0	—
Teelin,	Teelin and Cladna- geuragh, ...	248½	16 2 0	62 Barrels cured.
Mulroy,	Downing's Pier, ...	207½	13 12 6	—
	Totals,	1,638½	432 2 7	

(b) IRISH SPRING AND SUMMER HERRING

No.	Coast Guard Station.	Ports or Creeks from which the Fishing was carried on.	Places at which the Boats discharged their Fish.	Date when Fishing may be said to have commenced.
1	Howth, . . .	Howth, . . .	Howth, . . .	13th May, .
2	Arklow, . . .	Arklow, . . .	Arklow, . . .	19th June, .
3	Dunmore East, .	Dunmore East, .	Dunmore East, .	15th April, .
4	Ballycotton, .	Ballycotton, .	Ballycotton, .	1st February, .
5	East Ferry, .	Queenstown, .	Queenstown, .	22nd April, .
6	Upper Cove, .	Kinsale, . . .	Kinsale, . . .	1st May, .
7	Union Hall, .	—	Glandore and Union Hall.	—
8	Castletownbere, .	Bantry, . . .	Bantry, . . .	28th July, .
9	Do., . . .	Castletownbere, .	Castletownbere, .	3rd February, .
10	Knightstown, .	—	Knightstown, .	—
11	Killybegs, . . .	Killybegs, . . .	Killybegs, . . .	7th April, .
12	Teelin, . . .	Teelin, . . .	Teelin and Cladnagearagh.	27th March, .
13	Burtonport, .	Burtonport, .	Burtonport, .	May, . . .
14	Do., . . .	Gortnasate, . .	Gortnasate, . .	2nd May, .
15	Mulroy, . . .	Downings Bay, .	Downings Pier, .	2nd May, .
16	Buncrana, . . .	Buncrana, . . .	Buncrana, . . .	5th February, .
17	Malin Head, . .	Malin Head, . .	Malin Head, . .	20th May, .
18	Cloghy, . . .	Portavogie, . .	Portavogie, . .	22nd April, .
19	Ardglass, . . .	Ardglass, . . .	Ardglass, . . .	23rd April, .
20	Kilkeel, . . .	Kilkeel, . . .	Kilkeel Harbour, .	13th May, .
21	Clogher Head, .	Clogher Head, .	Clogher Head, .	2nd February, .
22	Balbriggan, . .	Balbriggan, . .	Balbriggan, . .	February, .

FISHING, 1908. (TABLE NO. I.)

Date when Fishing may be said to have ended	Quantity landed.	Value.	Quantity cured for Exportation.	Quantity sold for local consumption.	No.
31st July,	Cwts. 10,737	£ s. d. 3,097 7 11	—	—	1
30th July,	390	163 0 6	—	All.	2
15th July,	5,508	1,079 9 7	—	One-eighth.	3
27th June,	329½	98 7 0	—	—	4
24th June,	1,207	177 15 0	—	About one-tenth.	5
30th June,	7,710	1,800 0 0	—	—	6
	376½	76 19 0	—	—	7
31st July,	265	80 11 6	—	—	8
Do.,	298½	54 19 0	6 barrels,	—	9
—	323	123 18 6	—	One-thirteenth.	10
24th June,	10,356	4,478 15 3	2,544 barrels,	—	11
5th June,	1,528½	569 15 9	517 barrels,	—	12
June,	567	426 2 0	170 barrels,	Balance.	13
6th June,	3,622½	2,375 0 0	1,375 barrels,	—	14
13th June,	31,500	22,898 0 0	11,504 barrels,	—	15
30th June,	16,905	8,936 1 5	6,909 barrels,	—	16
16th June,	525	430 0 0	150 barrels,	Balance.	17
31st July,	5,854	1,891 16 0	—	One-half.	18
do.,	18,636	4,906 14 3	60 barrels,	Seven-eighteenth.	19
do.,	6,461½	1,827 6 7	—	One-half.	20
do.,	840	223 6 0	—	All.	21
July,	778	198 8 0	—	—	22
Total,	124,717½	55,922 16 3	23,235 barrels.		

[Table continued on page 170.]

(b) IRISH SPRING AND SUMMER HERRING FISHING, 1908.

(TABLE No. I.)—continued.

No.	Coast Guard Station.	Quantity despatched to distant markets for sale as <i>fresh</i> Fish.	Places where the Herrings were cured.	Month in which greatest Quantity captured.	Number of Steam Drifters that fished from Ports within this Station.	Number of Irish Row Boats using Seine or Ring Nets	OBSERVATIONS.
1	Howth.	All.	—	July.	2	—	—
2	Arklow.	—	—	July.	—	—	—
3	Dunmore East.	Seven-eighths.	—	May.	6	—	—
4	Ballycotton.	All.	—	June.	—	—	—
5	East Ferry.	Balance.	—	May.	1	—	—
6	Upper Cove.	All.	—	May.	2	—	—
7	Union Hall.	—	—	—	—	—	Landed by Mackerel boats.
8	Castletownbere (Bantry).	Nearly all.	—	July.	—	2	—
9	Castletownbere.	Nearly all.	—	July.	—	1	—
10	Knightstown.	Balance.	—	June.	—	—	Landed by Mackerel boats.
11	Killybegs.	Balance.	Killybegs.	May.	13	—	—
12	Teelin.	Balance.	Teelin.	May.	14	—	—
13	Burtonport.	—	Burtonport, Rutland Island, and Edernish Island.	May.	2	10	—
14	Burtonport (Gortnasate).	—	Gortnasate.	May.	10	—	—
15	Mulroy.	—	Downings.	May.	80	—	—
16	Buncrana.	Balance.	Buncrana.	May.	134	—	—
17	Malin Head.	—	Malin Head.	May.	3	—	—
18	Cloghy.	One-half.	—	July.	—	—	—
19	Ardglass.	Balance.	—	July.	—	—	—
20	Kilkeel.	One-half.	—	July.	—	—	—
21	Clogher Head.	—	—	July.	—	—	—
22	Ballybrigan.	Nearly all.	—	February.	—	—	—

(b) See page 148.

(c) IRISH SPRING AND SUMMER HERRING
FISHING, 1908. (TABLE No. II.)

Herrings were also landed at the places set forth below, which are not included in the foregoing Return.

Collecting Station.	Places where landed.	Quantity.	Value.
		Cwts.	£ s. d.
Kingstown, . . .	Kingstown,	129	66 5 0
Wicklow, . . .	Wicklow,	113	25 10 0
Courtown, . . .	Courtown and Cahore, . . .	90	39 0 0
Ballinacourty, . .	Dungarvan,	66	27 8 0
Helvick Head, . .	do.,	88	55 0 0
Youghal, . . .	Youghal,	196	75 9 0
Courtmaesherry, . .	Courtmaesherry,	2½	1 0 0
Baltimore, . . .	Baltimore,	46	10 7 0
Schull, . . .	Schull,	10½	3 2 6
Crookhaven, . . .	Crookhaven, Spanish Cove, and Goleen,	22½	9 2 0
Ballycrovane, . .	Glendria, Ardgroom, and Collaris, . .	144	36 0 0
Garnish and Dursey, .	Garnish and Dursey,	26	5 12 0
Portmagee, . . .	Portmagee,	23	11 17 6
Cahereiveen, . . .	Coonana and Coosroom,	19	9 0 0
Dingle, . . .	Dingle and Ballymore,	24	15 0 0
Ventry, . . .	Ventry,	5	1 19 0
Ballinagull, . . .	Ballydavid and Dooneen,	122	27 10 0
Brandon Creek, . .	Brandon Creek,	16	3 15 0
Askeaton, . . .	Askeaton,	22	11 10 0
Kilkee, . . .	Kilkee,	8½	4 12 0
Coosheen, . . .	Farrahy,	5½	3 11 0
Liscannor, . . .	Liscannor,	13	4 13 2
South Arran, . . .	South Arran,	134½	43 3 5
North Arran, . . .	Kilronan,	217	48 14 6
Galway, . . .	Galway,	25	15 0 0
Roundstone, . . .	Roundstone,	25	13 16 0
Cleggan, . . .	Cleggan,	9	3 10 0
Belmullet, . . .	Belmullet,	4½	3 16 3
Ballyglass, . . .	Muingereena and Tip,	28	28 0 0
Portmuck, . . .	Portmuck, Hiddesport, and Hills Port,	140	63 0 0
Carrickfergus, . .	Carrickfergus and Kilroot,	10½	9 0 0
Whitehead, . . .	Hills Port, Whitehead, Marchburn, and Cloughlin,	29	10 17 6
Whiteabbey, . . .	Belfast,	6	2 5 0
Portaferry, . . .	Portaferry,	200	60 0 0
Carlingford, . . .	Carlingford,	20	6 5 0
Skerries, . . .	Skerries,	27	5 12 0
Rush, . . .	Rush,	100	38 10 2
	Total,	2,167½	708 13 0

(c) See page 148.

STATEMENT of the TOTAL QUANTITY of FISH landed on the ENGLISH and WELSH COASTS during the Month and Nine Months ended 30th September, 1908, compared with the corresponding Periods of the Year 1907.

	September.		Nine Months ended 30th September.	
	1908.	1907.	1908.	1907.
QUANTITY.				
	Cwts.	Cwts.	Cwts.	Cwts.
Brill,	1,790	1,998	17,304	16,651
Soles,	5,155	5,011	49,102	47,832
Turbot,	5,212	5,257	48,315	49,686
Prime Fish not separately distinguished.	173	448	1,279	2,314
Total Prime Fish, ...	12,330	12,714	116,000	116,483
Bream,	8,342	3,425	59,685	47,334
Catfish,	3,229	3,927	58,437	67,662
Coalfish,	27,637	25,791	183,240	145,344
Cod,	131,889	100,085	1,565,823	1,639,460
Conger Eels,	3,494	4,249	31,942	38,602
Dabs,	8,281	10,737	76,156	79,506
Dogfish,	933	427	13,041	16,281
Dory,	406	182	1,740	1,796
Flounders or Flukes,	510	250	5,351	3,953
Gurnards,	7,428	6,813	81,750	79,042
Haddock,	241,650	288,270	1,872,301	2,115,366
Hake,	48,123	67,224	704,861	671,459
Halibut,	16,878	22,897	159,151	167,828
Latchetts (Tubs),	147	132	1,623	2,270
Lemon Soles,	4,449	5,087	37,495	35,054
Ling,	16,713	14,649	179,573	132,843
Megrimms,	8,207	9,535	63,902	63,084
Monks (or Anglers),	3,088	2,195	23,424	22,295
Mullet (Red),	18	38	581	491
Plaice,	90,163	98,587	686,973	696,131
Pollock,	2,281	2,267	15,489	12,523
Skates and Ray,	28,591	29,591	276,966	263,792
Torsk,	1,982	2,035	13,412	10,417
Whiting,	30,016	24,669	221,880	178,290
Witches,	1,569	1,979	25,957	19,617
Herrings,	512,550	429,672	1,025,433	1,321,000
Mackerel,	6,891	12,841	323,656	410,194
Mullet (Grey),	22	71	559	1,010
Pilchards,	74,109	43,689	91,442	84,207
Sprats,	—	—	17,493	16,176
Whitebait,	433	322	5,213	5,047
Fish not separately distinguished, ...	28,127	34,552	390,759	290,171
Total,	1,320,486	1,258,925	8,241,368	8,777,728
Shell Fish :—	No.	No.	No.	No.
Crabs,	151,936	172,945	4,368,300	4,510,576
Lobsters,	28,701	45,438	487,336	460,947
Oysters,	2,918,925	3,064,822	18,362,437	20,423,973
Other Shell Fish,	Cwts.	Cwts.	Cwts.	Cwts.
	59,660	55,377	341,318	364,323

NOTE.—The figures for 1908 are subject to correction in the Annual Returns.

**STATEMENT of the TOTAL VALUE of FISH landed on the ENGLISH and
WELSH COASTS during the Month and Nine Months ended 30th
September, 1908, compared with the corresponding Periods of the
Year 1907.**

	September.		Nine Months ended 30th September.	
	1908.	1907.	1908.	1907.
VALUE.				
Brill,	£ 6,383	£ 6,217	£ 54,090	£ 53,482
Soles,	37,206	36,012	329,216	329,492
Turbot,	26,113	21,417	183,906	193,805
Prime Fish not separately distin- guished,	220	612	1,740	3,661
Total Prime Fish, ...	69,982	64,258	568,952	580,340
Bream,	1,751	939	13,174	13,212
Catfish,	1,341	1,263	24,635	22,648
Coalfish,	5,620	5,586	43,167	44,199
Cod,	84,030	66,182	914,153	999,522
Conger Eels,	2,712	2,698	22,955	28,916
Dabs,	5,834	7,561	53,074	63,287
Dogfish,	226	126	3,592	4,849
Dory,	307	176	1,681	1,672
Flounders or Flukes,	356	144	3,082	2,649
Gurnards,	2,195	1,641	21,856	22,391
Haddock,	120,958	103,718	1,068,066	1,093,676
Hake,	44,007	50,260	432,972	422,367
Halibut,	38,369	36,016	302,186	270,375
Latechens (Tubs),	87	81	1,013	1,475
Lemon Soles,	10,867	11,579	83,063	86,357
Ling,	7,640	8,832	87,110	77,033
Megrims,	5,127	5,713	46,091	46,662
Monks (or Anglers'),	1,339	782	9,524	8,608
Mullet (Red),	59	118	1,452	1,313
Plaice,	97,058	87,230	717,879	682,612
Pollack,	1,064	1,089	7,151	6,881
Skates and Rays,	17,361	13,883	162,171	160,838
Torsk,	886	771	5,282	4,194
Whiting,	11,730	8,936	100,494	89,056
Witches,	1,891	2,031	30,024	23,052
Herrings,	180,190	170,431	315,632	416,407
Mackerel,	3,616	5,224	168,785	182,243
Mullet (Grey),	47	147	1,064	1,665
Pilchards,	25,713	11,170	31,186	21,237
Sprats,	—	—	3,093	2,530
Whitebait,	860	627	6,784	6,741
Fish not separately distinguished, ...	15,165	21,778	161,385	158,863
Total,	758,358	690,990	5,412,641	5,547,860
Shell Fish :—				
Crabs,	2,775	3,008	51,285	52,292
Lobsters,	1,405	2,204	22,493	22,091
Oysters,	9,848	9,900	55,409	62,151
Other Shell Fish,	13,604	13,898	88,439	103,465
Total,	27,632	29,110	217,626	240,029
Total value of all Fish, ...	785,990	720,100	5,630,267	5,787,889

NOTE.—The figures for 1908 are subject to correction in the Annual Returns.

STATEMENT of the TOTAL QUANTITY and VALUE of the FISH returned as landed on the SCOTTISH COASTS during the Month and Nine Months ended 30th September, 1908, compared with the corresponding periods for the Year 1907.

	September.		Nine Months ended 30th September.	
	1908.	1907.	1908.	1907.
QUANTITY.				
	Cwts.	Cwts.	Cwts.	Cwts.
Herrings,	233,844	333,745	5,422,725	6,168,078
Sprats,	182	1,382	3,545	4,110
Sparlings,	26	84	63	87
Mackerel,	4,374	8,339	22,715	25,989
Cod,	35,933	32,003	620,781	567,460
Ling,	15,616	9,413	173,143	116,339
Torsk (Tusk),	1,168	733	14,989	8,332
Saith (Coal Fish),	8,392	15,684	118,091	113,648
Haddock,	98,600	114,413	946,590	860,016
Whiting,	10,328	10,758	111,618	102,105
Conger Eel,	389	230	24,515	16,168
Turbot,	519	521	4,769	4,941
Halibut,	4,963	3,791	46,675	34,005
Lemon Soles,	3,705	3,722	25,792	25,276
Flounders, Plaice, Brill,	5,960	7,087	47,380	52,464
Skate and Rays,	6,213	5,717	107,164	72,184
Fish not separately distinguished, except Shell Fish.	10,784	9,760	88,012	78,281
Total,	441,096	557,332	7,673,515	8,249,453
Shell Fish:—	No.	No.	No.	No.
Crabs,	121,128	105,780	2,364,432	2,338,297
Lobsters,	88,871	90,957	523,919	537,073
Oysters,	80,850	112,370	355,220	518,380
	Cwts.	Cwts.	Cwts.	Cwts.
Clams,	15,931	140	5,919	4,564
Mussels,	3,034	9,963	73,058	82,065
Other Shell Fish.		3,264	39,655	35,727
VALUE.				
	£	£	£	£
Herrings,	56,854	74,616	1,098,424	1,789,866
Sprats,	32	89	549	670
Sparlings,	64	99	194	240
Mackerel,	1,090	1,939	5,487	6,273
Cod,	19,157	17,208	245,915	244,238
Ling,	3,118	2,392	46,314	37,540
Torsk (Tusk),	364	208	3,554	2,285
Saith (Coal Fish),	1,533	3,329	19,333	22,506
Haddock,	41,687	37,618	379,676	378,886
Whiting,	3,117	2,738	41,099	39,487
Conger Eel,	142	99	9,780	7,799
Turbot,	2,098	2,109	16,239	15,277
Halibut,	9,062	7,135	77,508	59,311
Lemon Soles,	8,226	7,793	52,616	52,428
Flounders, Plaice, Brill,	7,542	8,721	61,435	67,389
Skate and Rays,	1,235	1,207	25,992	21,451
Fish not separately distinguished, except Shell Fish.	4,780	4,277	39,373	41,000
Total,	160,121	171,777	2,123,788	2,786,627
Shell Fish:—				
Crabs,	787	739	14,924	11,949
Lobsters,	3,931	3,918	25,633	26,417
Oysters,	311	352	1,709	1,799
Clams,		18	878	644
Mussels,	662	500	3,445	4,566
Other Shell Fish,	935	1,116	10,838	9,896
Total,	6,626	6,642	57,427	55,277
Total Value of Fish landed,	166,747	178,419	2,181,215	2,841,904

NOTE.—The above figures are subject to correction in the Annual Returns.

STATEMENT of the TOTAL QUANTITY and VALUE of the FISH returned as landed on the IRISH COASTS during the Month and Nine Months ended 30th September, 1908, compared with the corresponding Periods of the Year 1907.

	September.		Nine Months ended 30th September.	
	1908.	1907.	1908.	1907.
QUANTITY.				
	Cwts.	Cwts.	Cwts.	Cwts.
Brill,	25	40	440	553
Soles,	264	295	2,118	2,438
Turbot,	90	97	658	648
Total Prime Fish,	379	432	3,216	3,639
Cod,	778	649	15,455	11,578
Conger Eel,	563	740	5,687	4,347
Haddock,	801	1,006	15,180	13,498
Hake,	1,082	595	5,728	3,842
Herrings,	17,663	24,525	188,365	154,965
Ling,	599	656	9,513	7,258
Mackerel,	27,232	5,388	287,397	192,443
Plaice,	2,294	2,058	18,907	18,043
Ray or Skate,	781	649	7,631	5,178
Sprats,	92	817	408	1,354
Whiting,	1,329	1,080	12,062	12,425
Fish not separately distinguished, except Shell Fish,	1,589	3,656	16,388	28,798
Total,	55,182	42,231	585,937	457,368
Shell Fish :—				
	No.	No.	No.	No.
Crabs,	33,209	45,501	219,623	310,671
Lobsters,	48,051	75,885	348,245	318,714
Oysters,	504	13,187	81,793	134,098
	Cwts.	Cwts.	Cwts.	Cwts.
Mussels,	259	348	3,571	10,453
Other Shell Fish,	1,043	996	10,819	13,419
VALUE.				
	£	£	£	£
Brill,	51	65	768	1,127
Soles,	1,000	1,159	8,701	9,889
Turbot,	360	327	2,347	2,508
Total Prime Fish,	1,420	1,551	11,816	13,524
Cod,	633	722	8,714	8,303
Conger Eel,	301	436	2,913	2,670
Haddock,	643	944	9,552	8,988
Hake,	828	833	4,460	5,227
Herrings,	8,486	9,305	74,653	60,384
Ling,	274	419	3,770	5,071
Mackerel,	7,299	1,392	68,458	51,125
Plaice,	2,430	2,354	19,800	19,133
Ray or Skate,	207	240	1,825	2,165
Sprats,	14	120	69	218
Whiting,	730	915	7,225	8,315
Fish not separately distinguished, except Shell Fish,	824	1,538	7,660	13,205
Total,	24,089	20,769	220,915	198,328
Shell Fish :—				
	£	£	£	£
Crabs,	84	186	641	1,326
Lobsters,	1,419	2,334	11,070	10,088
Oysters,	1	30	147	231
Mussels,	9	19	141	578
Other Shell Fish,	165	198	2,266	2,807
Total,	1,678	2,767	14,265	14,980
Total Value of Fish Landed,	25,767	23,536	235,180	213,308

NOTE.—The above figures are subject to correction in Annual Returns.

**AVERAGE PRICES of CROPS, LIVE STOCK, MEAT, PROVISIONS, &c., for
the QUARTER ended 30th SEPTEMBER, 1908.**

PRODUCT.	PROVINCE.				IRELAND.	
	Leinster.	Munster.	Ulster.	Con-naught.	1908.	1907.
CROPS:—	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Wheat, per 112 lbs.	8 1½	—	—	—	8 1½	—
Oats (White), "	6 5½	6 1½	6 8½	6 10½	6 5½	6 10½
" (Black), "	6 0	5 1½	—	—	5 3½	5 11
Barley, . . . "	8 0	7 4	—	—	7 4	7 2
Potatoes, . . . "	2 10½	3 4½	2 9½	3 3½	2 11½	3 6½
Hay (Clover), . . "	3 3½	2 4	3 2½	2 5½	3 0½	2 9½
" (Mendow), . . "	2 4½	1 8½	2 3½	1 10½	2 0½	1 9½
Grass Seed—						
(Perennial Rye), "	—	—	12 6	—	12 6	11 7
(Italian Rye), "	—	—	14 1½	—	14 1½	11 3½
Flax, . . . per 14 lbs.	—	—	6 2	—	6 2	7 6½
LIVE STOCK:—						
Store Cattle:—	<i>£ s. d.</i>	<i>£ s. d.</i>	<i>£ s. d.</i>	<i>£ s. d.</i>	<i>£ s. d.</i>	<i>£ s. d.</i>
One year old, per head.	7 17 11	7 3 3	6 4 8	6 19 4	6 17 0	6 16 10
Two years old, "	11 11 5	9 12 5	9 3 6	9 17 6	9 17 0	9 14 5
Three years old, "	13 2 9	13 15 2	11 12 9	11 13 2	12 10 9	12 11 1
Springers, . . . "	14 17 10	13 11 10	13 10 6	14 15 4	13 18 7	13 15 5
Store Sheep:—						
Lambs, . . . "	1 5 1	1 6 3	1 0 1	1 3 4	1 4 1	1 8 11
One year old and over, . . . "	1 16 9	1 14 11	0 19 11	1 16 5	1 14 10	2 0 11
Two years old and over, . . . "	1 17 2	—	1 3 0	2 1 1	2 0 6	2 2 2
Store Pigs (8 to 10 weeks old), . . "	1 0 7	1 2 6	1 7 8	1 4 6	1 4 5	1 1 4
Fat Cattle:—						
Bullocks, . . . "	—	—	—	—	18 4 7	17 13 7
Heifers, . . . "	—	—	—	—	15 1 10	14 15 4
Cows, . . . "	—	—	—	—	15 8 9	14 11 0
Fat Sheep:—						
Wethers, . . . "	—	—	—	—	1 17 9	2 2 5
Ewes, . . . "	—	—	—	—	2 0 11	2 4 5
Hoggets, . . . "	—	—	—	—	2 4 5	2 8 11
Lambs, . . . "	—	—	—	—	1 8 0	1 10 6
MEAT, PROVISIONS, &c.:—	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Beef (Live), per 112 lbs.	—	—	—	—	32 4	31 7½
" (Dead), . . . "	—	—	—	—	56 7	55 4½
Mutton (Live), . . . "	—	—	—	—	35 8	38 4½
" (Dead), . . . "	—	—	—	—	62 5	67 1½
Pork (Dead), . . . "	49 10½	52 6	54 4	49 6	52 7	52 1
Butter (Creamery), . . "	111 6	109 4	—	—	109 4	100 1
" (Factory), . . . "	96 0	97 10	—	—	97 10	83 2
" (Farmers), . . . "	96 6	98 5	97 5	99 5	98 1	83 11
Eggs, . . . per 112	8 9½	8 0½	—	8 0½	8 6	8 2
Wool, . . . per lb.	0 7½	0 7½	—	0 7½	0 7½	0 11

WEEKLY AVERAGE PRICES of WHEAT, OATS, and BARLEY, per 112 lbs., computed from Market Returns of certain quantities of these Cereals supplied by Inland Revenue Officers, during the QUARTER ended 30th SEPTEMBER, 1908.

Returns received in the Week ended		WHEAT.		OATS.		BARLEY.	
		Average Price per 112 lbs.	Quantity.	Average Price per 112 lbs.	Quantity.	Average Price per 112 lbs.	Quantity.
1908,		s. d.	Cwts. of 112 lbs.	s. d.	Cwts. of 112 lbs.	s. d.	Cwts. of 112 lbs.
July	4,	—	—	6 4½	2,924	—	—
"	11,	—	—	6 4½	2,668	—	—
"	18,	—	—	6 9	2,710	—	—
"	35,	—	—	6 10	2,888	—	—
August	1,	—	—	6 8½	3,072	—	—
"	8,	—	—	6 8½	3,275	—	—
"	15,	—	—	6 6½	2,543	—	—
"	22,	—	—	6 2½	4,450	—	—
"	29,	—	—	5 11	7,606	7 5½	845
September	5,	—	—	5 8½	9,100	7 4½	2,642
"	12,	—	—	5 6½	14,778	7 4½	5,212
"	19,	8 0	1,750	5 6½	19,810	7 3½	10,086
"	26,	8 2½	1,750	5 5½	20,372	7 3½	13,627

AVERAGE PRICES of FAT CATTLE and FAT SHEEP, per 112 lbs., LIVE WEIGHT, sold in the DUBLIN MARKETS during the QUARTER ended 30th SEPTEMBER, 1908, and also for the corresponding period during the eleven preceding years.

DESCRIPTION.	YEAR.													
	1908.	1907.	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.		
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Fat Cattle,	32 4	31 7½	30 3½	30 5½	31 6½	31 9½	33 10	31 6½	32 6½	30 11½	29 0½	29 10½		
Fat Sheep,	35 8	38 4½	37 8	35 1½	35 9½	33 1	32 1	32 0½	34 5½	33 1½	31 3½	32 10		

NUMBER of ANIMALS included in Returns furnished under the MARKETS and FAIRS (Weighing of Cattle) ACT, 1891, Sections 3 and 4, during the Quarter ended 30th SEPTEMBER, 1908.

WEEK ENDED	FAT CATTLE.					FAT SHEEP.			
	Dublin.		Belfast.		Total Number of Cattle included in Returns.	Dublin.		Belfast.	Total Number of Sheep included in Returns.
	Corporation Market Authorities.	Mr. Gavin Low, Auctioneer.	Corporation Market Authorities.	Mr. John Robson, Auctioneer.		Corporation Market Authorities.	Mr. Gavin Low, Auctioneer.	Corporation Market Authorities.	
July 2,	62	94	—	15	171	6	341	—	347
" 9,	56	56	—	15	127	16	349	—	365
" 16,	102	108	—	—	210	—	517	—	517
" 23,	79	169	—	—	248	8	408	—	416
" 30,	76	120	—	21	217	—	455	—	455
August 6,	75	104	—	16	195	—	450	—	450
" 13,	85	110	—	19	214	—	452	—	462
" 20,	83	133	78	33	327	13	364	—	377
" 27,	94	166	91	25	376	—	366	—	366
September 3,	105	98	100	14	317	—	190	—	190
" 10,	97	137	132	13	390	14	214	—	228
" 17,	95	129	135	11	370	—	175	—	175
" 24,	101	132	147	18	398	—	261	—	261
Totals,	1,110	1,556	703	200	3,569	57	4,552	—	4,609

DISEASES OF ANIMALS IN IRELAND.

NUMBER of OUTBREAKS of SWINE FEVER, and Number of SWINE returned as having been SLAUGHTERED in Ireland, under the Diseases of Animals Act of 1894, in the undermentioned period, by Order of the Department.

Quarter ended	SWINE-FEVER.	
	Outbreaks confirmed.	Swine Slaughtered as Diseased or as having been Exposed to Infection.
30th September, 1908,	34	1,123

NUMBER of OUTBREAKS reported as having taken place, and NUMBER of ANIMALS returned as having been attacked by ANTHRAX and GLANDERS in Ireland in the undermentioned period.

Quarter ended	ANTHRAX.		GLANDERS (including Farcy).		Epizootic Lymphangitis.	
	Outbreaks Reported.	Animals Attacked.	Outbreaks Reported.	Animals Attacked.	Outbreaks Reported.	Animals Attacked.
30th September, 1908.	3	3	—	—	—	—

NUMBER of Cases of RABIES in DOGS in IRELAND during the undermentioned period.

Quarter ended	Number of Cases.
30th September, 1908,	—

NUMBER of OUTBREAKS reported as having taken place, and NUMBER of ANIMALS returned as having been attacked by SHEEP SCAB and PARASITIC-MANGE in Ireland in the undermentioned period.

Quarter ended	SHEEP-SCAB.		PARASITIC-MANGE.	
	Outbreaks Reported.	Sheep Attacked.	Outbreaks Reported.	Animals Attacked.
30th September, 1908,	17	125	8	8

Veterinary Branch,
Department of Agriculture and Technical Instruction for Ireland,
Dublin.

BUTTER PRICES DURING THE QUARTER

ABSTRACTED FROM "THE GROCER," "GROCER'S REVIEW,"

Excepting 1-lb. Rolls and Farmers' Butter all quotations are the Landed Prices of the less than the landed prices in Great Britain.

COUNTRY OF ORIGIN.	Type of Package.	Place of Sale.	WEEK ENDED			
			JULY.			
			4th.	11th.	18th.	25th.
IRELAND—	Creamery Butter.	Kiels, kegs, or pyramid boxes.	Per cwt.	Per cwt.	Per cwt.	Per cwt.
			^{s.} ^{s.} 112-115	^{s.} ^{s.} 112 115	^{s.} ^{s.} 112 119	^{s.} ^{s.} 112 118
			Liverpool, ...	109/6 113	111/6 113/6	113-115
			Bristol, ...	113 116	113-116	114 118
			Cardiff, ...	114-115	112-114	113-116
			Manchester, ...	110-113	111 114	114-116
			Birmingham, ...	111 114	112-114/6	115-116
			Glasgow, ...	111-112	111-112	112-114
			Limerick, ...	—	—	—
			Cork, ...	—	—	—
			Belfast, ...	—	—	—
			Dublin, ...	110-112	110 112	112-116/8
			F. O. R., ...	116/8	116/8	116/8 119
	Factories, ...	—	Liverpool, ...	106-109	106 108	107-110
			Bristol, ...	104-106	104 106	104-108
			Cardiff, ...	100-107	106-108	104-110
			Manchester, ...	—	—	—
			Cork, ...	96 98	94 97	97
	Farmers' Butter.	Firkins, 1st. Export Price.	Cork, ...	95 97	91-96	93-96
		Do. 2nd „	Cork, ...	95 96	90 95	91-95
		Do. 3rd „	Cork, ...	90 102	90 102	95-102
		Fresh, ...	Cork, ...	—	—	—
FRANCE, ...	12x2 lb. rolls, ...	London, ...	Per doz. lbs. 11-13/6	Per doz. lbs. 11-13/6	Per doz. lbs. 11-13/6	Per doz. lbs. 11-13/6
			Per cwt. 108	Per cwt. 108	Per cwt. 108	Per cwt. 112
DENMARK AND SWEDEN.	Kiels, ...	Copenhagen Quotation, {	97 Kr. 108/8 per = per 50 cwt. Kilos.	100 Kr. 112/2 per = per 50 cwt. Kilos.	103 Kr. 115/6 per = per 50 cwt. Kilos.	104 Kr. 116/9 per = per 50 cwt. Kilos.
			Average overprice.	—	—	—
			Liverpool, ...	115/6-118	116-119	119-123
			Bristol, ...	—	—	—
			Cardiff, ...	117-119	116-119	119-122
			Manchester, ...	114-117	114-117	119-123
			Birmingham, ...	115-118	115 119	120-122/6
			Newcastle-on-Tyne, ...	113 116	114-117	119-121
			Glasgow, ...	114-115	114-115	117 119
			Leith, ...	114-115	114-115	120-121
			Hull, ...	116-118	117-120	120-124
			F. O. R. London, ...	117/10	121/4	124/10
			—	—	—	—
			—	—	—	—
			—	—	—	—
FINLAND, ...	Kiels, ...	Manchester, ...	111-114	112-114	117-118	117-121
		Liverpool, ...	—	—	—	120-122
		Hull, ...	110-115	112-118	114-120	118-122
		Cardiff, ...	114-115	114-115	118	120

ENDED 30TH SEPTEMBER, 1908.

"GROCER'S GAZETTE," AND OTHER TRADE REPORTS.

Choicest Qualities. The Nett F.O.R. Price to an Irish Creamery would be 5s. to 7s. per cwt.
This figure covers freight, commission, handling, &c.

WEEK ENDED

AUGUST.					SEPTEMBER.				
1st.	8th.	15th.	22nd.	29th.	5th.	12th.	19th.	26th.	
Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	
110-118	112-116	112-116	114-118	112-118	112-116	112-116	114-119	118-120	
112-115/6	111/6-115	113-116	115-117	113-116	112-115	112-115	113-117	116-121	
114-118	115-118	116-119	116-120	116-120	116-120	114-120	114-120	120-124	
115-116	114-116	115-116	116-120	116-117	115-117	114-116	116-118	122-124	
113-116	113-116	114-117	115-118	112-117	114-116	113-116	114-118	115-122	
114-118/6	113-118/6	113/6-118	115-119	112-117	112-117	112-115	115-118	118-122	
111-113	110-112	114-116	116-118	112-114	112-114	112-114	114-116	116-118	
—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	
116 8 119	112 116 8	112 114	114-116/4	112-115	112-115	112 115	112 116/8	119-121/4	
116/8	119	119	119	119	119	119	119	121/4	
100 110	96 110	96 110	104-110	104-110	102-108	102-110	102-112	106-112	
100-108	106 100	104-108	104-107	104-109	102-104	102-106	104-108	104-110	
106	108	108	108	108	108	108	108	108	
105 106	106 108	106-108	108 110	105-110	106-108	108-110	108 112	110-113	
—	—	—	—	—	—	—	—	—	
99-101	97-100	99	99 102	99-100	99 100	99-100	101-104	103-104	
96-98	94-98	96-98	98 99	97-99	97-99	98-99	99-102	102-103	
95-97	93-97	94-96	94-96	95-96	95	95	97-98	98	
96-102	94-101	95-103	97-101	98-103	96-103	98-103	99-106	102-109	
Per doz. lbs.	Per doz. lbs.	Per doz. lbs.	Per doz. lbs.	Per doz. lbs.	Per doz. lbs.	Per doz. lbs.	Per doz. lbs.	Per doz. lbs.	
11/6-14	11/6-14	11/6-14	11/6-14	11/-13/6	11/-13/6	11/-13/6	11/-13/6	11/6-14	
Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	
112	112	112	112	108	108	108	108	112	
104 Kr. 116/9	104 Kr. 116/9	105 Kr. 117/10	101 Kr. 113/4	101 Kr. 113/4	99 Kr. 111/1	100 Kr. 112/2	104 Kr. 116/9	101 Kr. 116/9	
per — per	per = per	per = per	per = per	per = per	per = per	per = per	per = per	per = per	
50 cwt.	50 cwt.	50 cwt.	50 cwt.	50 cwt.	50 cwt.	50 cwt.	50 cwt.	50 cwt.	
Kilos.	Kilos.	Kilos.	Kilos.	Kilos.	Kilos.	Kilos.	Kilos.	Kilos.	
—	—	—	—	—	—	—	—	—	
120-124	120 124	122-124	118-122	118 122	116-120	118-120	122-124	122 124	
120/6-126	121-127	121/6 126	124-127	117 123	117-123	117-122	122-126	125 129	
—	—	—	—	—	—	—	—	—	
124-125	123 125	124-125	123-126	122	120 123	118-122	124-125	127-128	
117-123	117 122	120-123	122 124	117 121	117 121	116-120	122 124	124-128	
120-125/6	119 126	120-125/6	121-127	117-123	117-123	117-120	119 122/6	124-127/6	
120 121	119-121	121-123	122-123	119-121	117-120	116-118	119-121	124-126	
120-122	119-121	120-122	122-124	118 120	118-120	116-118	119-122	124-126	
123-124	121-122	120-122	121-124	118-119	118-119	116-117	118-120	124-125/6	
122-125	122-128	123-126	121-126	119-128	118-125	118-125	118-123	126-129	
127/2	127/2	128/4	123/8	123/8	121/4	122/6	127/2	127/2	
117-119	117-119	118-120	118-121	116-117	116-117	115-116	119-120	122-124	
—	—	—	—	114-116	115-117	114 119	119-123	122-124	
118-122	118-122	118-122	118-122	116-122	116-118	116-118	116-118	119-123	
120-122	120-122	120-122	120-122	120	118	117	120	125	

[Continued on pages 182-3.]

BUTTER PRICES DURING THE QUARTER

ABSTRACTED FROM "THE GROCER," "GROCER'S REVIEW,"

Excepting 1 lb. Rolls and Farmers' Butter all quotations are the Landed Prices of the less than the landed prices in Great Britain.

COUNTRY OF ORIGIN.	Type of Package.	Place of Sale.	WEEK ENDED			
			JULY			
			4th.	11th.	18th.	25th.
RUSSIA & SIBERIA.	Kiebs, ...	London, ...	Per cwt. 106-110	Per cwt. 106-110	Per cwt. 106-110	Per cwt. 106-110
		Liverpool, ...	104-108	105-110	107/6 112	108-113
		Bristol, ...	108-112	108-112	110-111	110-114
		Cardiff, ...	108-110	108-112	109-112	112-114
		Manchester, ...	105-108	105-108	106-112	108-112
		Birmingham, ...	104-108	104-110	107-111	107/6 112
		Glasgow, ...	106-108	106-108	106-108	106-108
		Leith, ...	102-105	102-105	104-108	104-108
		Hull, ...	108-112	108-112	110-114	112-114
HOLLAND, ...	Boxes, ...	London, ...	110-112	110-112	112-114	112-114
	Rolls, ...	do. ...	Per doz. lbs. 12/6-13	Per doz. lbs. 12/6-13	Per doz. lbs. 13-13/6	Per doz. lbs. 13-13/6
	Boxes, ...	Glasgow, (Fresh, Salt,	Per cwt. 114-116	Per cwt. 115-117	Per cwt. 120-121	Per cwt. 121-122
		Manchester, ...	110-112	111-113	111-116	115-117
			—	—	—	—
		Hull, ...	113-116	114-116	116-120	118-122
ITALY, ...	Rolls, ...	London, ...	Per doz. lbs. 12/6 13/6	Per doz. lbs. 12/6 13/6	Per doz. lbs. 12/6 13/6	Per doz. lbs. 12/6 13/6
			Per cwt. —	Per cwt. —	Per cwt. —	Per cwt. —
CANADA ...	56 lb. boxes, ...	London, ...	—	—	116-118	116-118
		Liverpool, ...	—	111-114/6	113-115	113-117
		Bristol, ...	114-116	113-116	114-118	114-118
		Cardiff, ...	115-116	114-116	115-118	115-118
		Birmingham, ...	—	—	—	—
		Manchester, ...	—	—	—	—
		Glasgow, ...	—	—	—	—
			—	—	—	—
AUSTRALIA & NEW ZEALAND.*	Boxes, ...	London, ...	A. 106-108 Z. 112-114	A. 108-110 Z. 112-116	A. 112 Z. 112-116	A. — Z. 114-116
		Liverpool, ...	A. — Z. —	A. — Z. —	A. — Z. —	A. — Z. —
		Bristol, ...	A. 108-114 Z. —	A. 106-112 Z. —	A. 110-112 Z. —	A. 110-112 Z. —
		Cardiff, ...	A. 100-112 Z. —	A. 113 Z. —	A. — Z. —	A. — Z. —
		Manchester, ...	A. — Z. —	A. — Z. —	A. — Z. —	A. — Z. —
		Birmingham, ...	A. — Z. —	A. — Z. —	A. — Z. —	A. — Z. —
		Glasgow, ...	A. — Z. —	A. — Z. —	A. — Z. —	A. — Z. —
		Leith, ...	A. — Z. —	A. — Z. —	A. — Z. —	A. — Z. —
		Hull, ...	A. — Z. —	A. — Z. —	A. — Z. —	A. — Z. —
			—	—	—	—
			—	—	—	—
			—	—	—	—
			—	—	—	—
			—	—	—	—
			—	—	—	—
ARGENTINA, ...	Boxes, ...	London, ...	—	—	—	—
		Liverpool, ...	—	—	—	—
		Bristol, ...	—	—	—	—
		Cardiff, ...	—	—	—	—
		Manchester, ...	—	—	—	—
		Birmingham, ...	—	—	—	—
UNITED STATES, ...	Tubs and boxes, ...	London, ...	—	—	100-101	—
		Liverpool, ...	—	—	—	—
		Bristol, ...	—	—	—	—
		Cardiff, ...	—	—	—	—
		Manchester, ...	—	—	—	—
			—	—	—	—

* A.—Australia. Z.—New Zealand.

ENDED 30TH SEPTEMBER, 1908—continued.

"GROCER'S GAZETTE," AND OTHER TRADE REPORTS.

Choicest Qualities. The Nett F.O.R. Price to an Irish Creamery would be 5s. to 7s. per cwt.
This figure covers freight, commission, handling, &c.

WEEK ENDED

AUGUST					SEPTEMBER			
1st.	8th.	15th.	22nd.	29th.	5th.	12th.	19th.	26th.
Per cwt. s. s. 106 119 104 112 108 114 112 107 112 108 111 104 108 102 108 112 115	Per cwt. s. s. 106 110 104/6-112 110 114 108 112 108 112 106 110 — — 108 116	Per cwt. s. s. 106 112 108 111 109 114 110 112 108 112 104 111 108 110 106 108 116	Per cwt. s. s. 106 112 108 112 108 114 112 114 110 114 105 112 110 111 104 108 112 114	Per cwt. s. s. 106 110 106 111 108 114 114 115 108 110 108 112 101 111 108 110 108 119 112 114	Per cwt. s. s. 106 110 106 110 104 112 108 111 110 114 108 110 104 110 106 108 107 108 110 114	Per cwt. s. s. 106 110 104 112 110 114 108 112 104 110 108 110 104 112 108 110 106 108 110 114	Per cwt. s. s. 106 112 104 112 110 114 112 114 108 112 104 112 108 110 104 112 106 108 110 114	Per cwt. s. s. 106 112 106 114 110 116 110 112 108 114 106 112 112 114 106 110 109 114
Per doz. lbs. 13 13/6 121 122 113 117 — 118 121	Per doz. lbs. 13 13/6 Per cwt. 119 120 113 115 — 116 118	Per doz. lbs. 13 13/6 Per cwt. 121 122 115 117 — 118 120	Per doz. lbs. 13 13/6 Per cwt. 121 121 117 119 — 108 120	Per doz. lbs. 13 13/6 Per cwt. 118 119 112 114 — 115 121	Per doz. lbs. 12/6 13/6 Per cwt. 114 115 108 110 — 114 118	Per doz. lbs. 12/6 13/6 Per cwt. 112 113 106 108 — 114 118	Per doz. lbs. 13 13/6 Per cwt. 112 113 108 109 — 114 118	Per doz. lbs. 13 13/6 Per cwt. 118 120 117 118 — 120 122
Per doz. lbs. 12/6 13/6 Per cwt. 114 118 112/6 116 116 120 115 117 — 116 —	Per doz. lbs. 12 13 Per cwt. 111 118 111 115 116 121 116 117 — 115 116 —	Per doz. lbs. 12 13 Per cwt. 114 118 112/6 115/6 116 121 116 118 — 115 116 —	Per doz. lbs. 13 Per cwt. 114 118 113 116/6 116 120 115 116 — 115 117 —	Per doz. lbs. 13 Per cwt. 112 114 112 116 116 120 115 120 — 115 —	Per doz. lbs. 12 13 Per cwt. 112 116 112 116 115 120 115 118 117 121 115 —	Per doz. lbs. 12 13 Per cwt. 114 116 112 114 115 120 115 118 117 119 115 —	Per doz. lbs. 12 13/6 Per cwt. 116 116 118 118 122 116 122 119 121 115 —	Per doz. lbs. 12 13/6 Per cwt. 117 116 118 118 123 116 124 120 122/6 116 —
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TABLES SHOWING THE EXPORTS

TABLE

RETURN of the NUMBER of ANIMALS EXPORTED from IRELAND to GREAT BRITAIN
PORTS OF EMBARKATION

IRISH PORTS.	CATTLE.							SHEEP.			
	Fat.	Stores (fattening).	Milch Cows.	Springers.	Other Cattle.	Calves.	Total.	Fat.	Stores.	Lambs.	Total.
Ballina, . . .	107	.	.	1	121	.	232	436	.	4,424	4,860
Belfast, . . .	5,219	21,159	2,191	3,451	8	360	32,388	832	.	21,201	22,033
Coleraine, . . .	14	286	1	46	2	.	349	55	29	217	301
Cork, . . .	2,395	8,694	854	1,304	372	4,171	17,793	1,663	1,798	23,083	26,544
Drogheda, . . .	6,291	2,204	273	32	.	3	8,803	9,145	.	14,293	23,438
Dublin, . . .	50,014	21,957	8,568	1,821	178	1,371	83,909	62,562	.	102,759	165,321
Dundalk, . . .	725	2,426	318	307	.	.	3,776	6,181	.	12,951	19,135
Dundrum, . . .	.	61	9	6	.	.	79	.	.	.	.
Greenore, . . .	117	3,332	585	1,345	.	4	5,383	3,353	.	7,010	10,363
Larne, . . .	99	5,102	9	101	.	435	5,746	156	670	1,715	2,441
Limerick, . . .	431	251	1	.	.	.	683	.	29	65	94
Londonderry, . . .	1,044	10,811	370	1,226	361	701	14,513	1,915	2,905	13,340	18,190
Milford, . . .	3	115	1	.	10	.	129	.	.	.	.
Mulroy, . . .	.	127	3	.	.	.	130	.	.	35	35
Newry, . . .	64	1,662	21	13	.	.	1,669	2,195	.	4,969	7,164
Portrush, . . .	.	26	2	.	.	.	28	.	.	.	.
Rosslare, . . .	.	.	.	.	.	.	.	.	.	.	.
Sligo, . . .	411	263	9	1	177	.	861	735	.	4,654	5,389
Warrenpoint, . . .	.	.	.	.	.	.	.	.	.	371	371
Waterford, . . .	7,499	5,770	37	83	369	195	13,953	7,233	10	20,572	27,845
Westport, . . .	251	23	3	1	161	1	440	2,659	.	8,528	11,187
Wexford, . . .	373	59	.	.	.	.	432	2,626	.	1,569	4,195
Total, . . .	75,057	83,731	13,255	9,738	1,762	7,241	190,787	101,779	5,371	211,756	318,906

TABLE

RETURN of the NUMBER of ANIMALS EXPORTED from IRELAND to GREAT BRITAIN
PORTS OF DEBARKATION

BRITISH PORTS.	CATTLE.							SHEEP.			
	Fat.	Stores (fattening).	Milch Cows.	Springers.	Other Cattle.	Calves.	Total.	Fat.	Stores.	Lambs.	Total.
Ardrossan, . . .	1,574	5,304	910	900	2	7	8,697	.	.	310	310
Ayr, . . .	2,007	9,021	325	678	2	193	12,220	145	170	1,071	1,886
Barrow, . . .	62	466	140	391	.	.	1,059	38	.	319	387
Bristol, . . .	864	2,485	220	231	.	466	4,316	3,312	219	6,420	9,951
Cardiff, . . .	.	.	.	.	.	.	.	.	.	.	.
Dover, . . .	.	.	.	.	.	.	.	.	.	.	.
Fishguard, . . .	4,146	7,966	509	719	.	3,137	16,477	3,231	1,481	23,856	28,568
Fleetwood, . . .	129	1,807	471	484	.	.	2,891	738	902	11,030	13,570
Glasgow, . . .	11,890	17,980	863	1,211	1,135	1,196	34,275	919	58	5,980	6,967
Greenock, . . .	145	2,362	12	82	.	85	3,186	9	.	25	34
Heysham, . . .	2,041	5,496	1,103	1,022	.	114	9,776	5,070	1,414	3,109	9,593
Holyhead, . . .	7,746	12,760	1,390	1,640	9	428	23,973	20,317	.	26,731	47,048
Liverpool, . . .	32,399	11,772	7,219	2,206	614	1,141	55,351	61,615	687	142,974	205,276
London, . . .	.	1	2	2	.	.	3	.	.	.	.
Manchester, . . .	7,065	248	20	1	.	7,343	5,619	.	16,336	21,955	.
Newhaven, . . .	.	31	.	4	.	35	.	.	.	.	.
Plymouth, . . .	514	26	.	1	.	99	639	.	.	.	.
Preston, . . .	695	.	27	4	.	726	120	.	385	505	.
Silloth, . . .	3,660	1,420	5	.	.	5,085	231	.	904	1,135	.
Southampton, . . .	43	53	14	6	.	116	379	40	50	469	.
Stranraer, . . .	77	3,970	9	100	.	378	4,584	36	400	716	1,152
Whitehaven, . . .	.	64	9	6	.	79	.	.	.	.	.
Total, . . .	75,057	83,731	13,255	9,738	1,762	7,244	190,787	101,779	5,371	241,766	348,906

AND IMPORTS OF ANIMALS.

I.

during the Three Months ended 30th SEPTEMBER, 1908, showing the
in Ireland.

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	IRISH PORTS.
Fat.	Stores.	Total.		Stal- lions.	Mares.	Gold- ings.	Total.				
454		454								5,546	Ballina.
1,280	477	1,757	66	5	675	1,266	1,916	1	6	58,197	Belfast.
18		18			3	11	14		4	686	Coleraine.
3,423		3,423		3	228	449	680	1	146	48,587	Cork.
418	83	501	1		12	12	24			32,767	Drogheda.
12,056	1	12,057	31	110	1,611	1,559	3,280	1	23	264,622	Dublin.
1,453	570	2,023	350		75	73	148		248	25,680	Dundalk.
										79	Dundrum.
94	37	131	6		650	415	1,065	1	70	17,019	Grenore.
43	206	249	1	3	67	111	184		3	8,624	Larne.
						1	1			778	Limerick.
127	14	141		1	50	66	117		3	32,964	Londonderry.
7		7	1							137	Millford.
11		11								170	Mulroy.
55		55	81		16	11	27		15	8,505	Newry.
21		21								49	Portrush.
			2		2	2	4			6	Rosslare.
3,633		3,633			2	1	3			9,886	Sligo.
										571	Warrenpoint.
3,302		3,302		6	326	481	813	3	64	15,980	Waterford.
326		326			3	2	5	1		11,559	Westport.
608		608			5	4	9			5,211	Wexford.
27,329	1,388	28,717	542	128	3,725	4,467	8,820	8	582	577,862	Total.

II.

during the Three Months ended 30th SEPTEMBER, 1908, showing the
in Great Britain.

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	BRITISH PORTS.
Fat.	Stores.	Total.		Stal- lions.	Mares.	Gold- ings.	Total.				
232	757	989	84		76	192	268		2	10,350	Ardrossan.
362	337	699	63	1	30	70	101		3	15,078	Ayr.
528	33	561			1	28	21			2,057	Barrow.
682		682		3	74	137	214	1	42	15,206	Bristol.
						1	1			1	Cardiff.
					7	8	15		1	16	Dover.
1,229		1,229	2	3	425	655	1,083	1	70	47,430	Fishguard.
21		21	1	4	280	398	682		1	17,166	Fleetwood.
3,348	16	3,364	3		200	324	521	1	10	45,144	Glasgow.
				1	32	22	55			3,275	Greenock.
2,558		2,558		3	183	363	549		2	22,478	Heysham.
6,401	37	6,438	23	104	1,739	1,519	3,362	2	70	80,916	Holyhead.
11,537	125	11,662	364	4	425	482	911	3	376	273,943	Liverpool.
									2	5	London.
376		376	1	1	115	81	197		1	20,873	Manchester.
					2	3	5			40	Newhaven.
31	1	32			10	10	20			691	Plymouth.
					6	4	10			1,341	Preston.
					6	10	16			6,236	Silloth.
24		24			20	53	73			682	Southampton.
	82	82	1	3	67	114	184		2	5,955	Stranraer.
										79	Whitehaven.
27,329	1,388	28,717	542	128	3,725	4,467	8,820	8	582	577,862	Total.

TABLE

RETURN of the NUMBER of ANIMALS IMPORTED into IRELAND from GREAT BRITAIN
of DEBARKATION

IRISH PORTS.	CATTLE.							SHEEP.			
	Fat.	Stores (fattening).	Milch Cows.	Springers.	Other Cattle.	Calves.	Total.	Fat.	Stores.	Lambs.	Total.
Ballinn,	1	.	.	.	.	1	.	33	.	33
Belfast,	2	.	.	.	1	3	50	6,434	1,226	7,710
Coleraine,	215	.	215
Cork,	3	.	.	.	.	3	.	57	6	43
Drogheda,
Dublin,	1	21	7	.	.	3	32	2,788	2,347	1,681	6,816
Dundalk,
Dundrum,
Greenore,	2	.	.	.	.	2	2	1	.	3
Larne,	784	324	295	1,403
Limerick,
Londonderry,	3	.	.	.	6	9	5	112	2,651	2,798
Newry,
Rosslare,	1	.	1	.	2	.	.	1	1
Sligo,	10	.	66	106
Waterford,	3	1	.	.	1	5	.	108	1	109
Westport,
Wexford,
Total,	1	35	9	.	1	11	57	3,669	9,641	5,927	19,237

TABLE

RETURN of the NUMBER of ANIMALS IMPORTED into IRELAND from GREAT BRITAIN
EMBARKATION in

BRITISH PORTS.	CATTLE.							SHEEP.			
	Fat.	Stores (fattening).	Milch Cows.	Springers.	Other Cattle.	Calves.	Total.	Fat.	Stores.	Lambs.	Total.
Ardrossan,	50	1,454	285	1,789
Ayr,	679	4,873	972	6,524
Barrow,	1	1	.	.	.	.
Bristol,	2	.	.	.	.	2	.	1	.	2
Cardiff,
Fishguard,	3	2	.	1	1	7	.	38	1	39
Fleetwood,
Glasgow,	6	.	.	.	1	7	312	1,543	2,701	4,556
Greenock,	5	5	.	156	847	1,003
Heysham,	4	.	.	.	.	4	.	21	.	21
Holyhead,	15	.	.	.	2	17	27	12	62	101
Liverpool,	1	.	6	.	.	1	8	.	24	6	30
London,
Manchester,
Newhaven,
Plymouth,
Silloth,	5	1	.	.	.	6	2,496	1,212	1,051	4,759
Southampton,	1	.	1
Stranraer,	105	306	.	411
Whitehaven,
Total,	1	35	9	.	1	11	57	3,669	9,641	5,927	19,237

III.

during the Three Months ended 30th SEPTEMBER, 1908, showing the PORTS in Ireland.

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	IRISH PORTS.
Fat.	Stores.	Total.		Stallions.	Mares.	Geldings.	Total.				
.	9	9	.	5	106	97	208	.	1	31	Ballina.
.	.	.	.	.	7	2	9	.	.	7,931	Belfast.
.	.	.	.	10	85	72	167	1	.	221	Coleraine.
.	.	.	.	.	1	1	2	.	.	211	Cork.
.	3	3	3	176	611	470	1,260	.	1	2	Drogheda.
.	.	.	.	.	1	.	1	.	.	8,115	Dublin.
.	.	.	.	.	.	.	.	.	.	1	Dundalk.
.	.	.	.	.	.	.	.	.	.	.	Dundrum.
.	.	.	.	2	63	51	116	.	.	121	Greenore.
.	.	.	.	5	83	30	118	.	.	1,521	Larne.
.	.	.	.	.	1	.	1	.	.	1	Limerick.
.	.	.	.	1	4	6	11	.	.	2,818	Londonderry.
.	.	.	.	.	3	1	4	.	.	4	Newry.
.	.	.	.	.	3	1	4	.	.	7	Rosslare.
.	4	1	.	23	98	91	215	.	.	106	Sligo.
.	.	.	.	.	.	.	.	.	.	333	Waterford.
.	.	.	.	.	1	.	1	.	.	1	Westport.
.	.	.	.	.	.	.	.	.	.	.	Wexford.
.	16	16	3	222	1,070	825	2,117	1	2	21,433	Total.

IV.

during the Three Months ended 30th SEPTEMBER, 1908, showing the PORTS of Great Britain.

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	BRITISH PORTS.
Fat.	Stores.	Total.		Stallions.	Mares.	Geldings.	Total.				
.	1	6	10	.	.	1,799	Ardrossan.
.	62	37	99	.	.	6,623	Ayr.
.	.	.	.	1	1	.	2	.	.	3	Barrow.
.	.	.	.	11	115	107	236	.	.	210	Bristol.
.	Cardiff.
.	.	.	.	18	70	56	144	.	.	190	Fishguard.
.	9	9	.	3	18	23	44	.	1	55	Fleetwood.
.	26	46	72	.	.	4,633	Glasgow.
.	.	.	.	1	8	9	18	.	.	1,020	Greenock.
.	.	.	.	1	13	13	27	.	.	52	Heysham.
.	3	3	2	135	436	290	861	.	.	984	Holyhead.
.	.	.	1	1	13	32	46	.	1	86	Liverpool.
.	5	2	7	.	.	7	London.
.	2	.	2	.	.	2	Manchester.
.	Newhaven.
.	4	4	.	.	.	.	.	.	.	4	Plymouth.
.	.	.	.	43	213	173	429	.	.	5,194	Siloah.
.	1	1	2	1	.	4	Southampton.
.	.	.	.	5	83	30	118	.	.	529	Stranraer.
.	Whitehaven.
.	16	16	3	222	1,070	825	2,117	1	2	21,433	Total.

**RETURN of the NUMBER of ANIMALS EXPORTED from IRELAND to the
showing the PORTS of**

IRISH PORTS.	CATTLE.					SHEEP.		
	Fat.	Stores.	Other Cattle.	Calves.	Total.	Sheep.	Lambs.	Total.
BELFAST,	13	178	.	17	208	70	1,373	1,443
DUBLIN,	115	16	.	.	131	56	2,242	2,298
TOTAL,	128	194	.	17	339	126	3,615	3,741

**RETURN of NUMBER of ANIMALS EXPORTED from IRELAND to the
showing the PORTS of DEBARKATION**

ISLE OF MAN PORT.	CATTLE.					SHEEP.		
	Fat.	Stores.	Other Cattle.	Calves.	Total.	Sheep.	Lambs.	Total.
DOUGLAS,	128	194	.	17	339	126	3,615	3,741

**RETURN of the NUMBER of ANIMALS IMPORTED into IRELAND from the
showing the PORTS of**

IRISH PORTS.	CATTLE.					SHEEP.		
	Fat.	Stores.	Other Cattle.	Calves.	Total.	Sheep.	Lambs.	Total.
BELFAST,
DUBLIN,
TOTAL,

**RETURN of the NUMBER of ANIMALS IMPORTED into IRELAND from the
showing the PORTS of EMBARKATION**

ISLE OF MAN PORT.	CATTLE.					SHEEP.		
	Fat.	Stores.	Other Cattle.	Calves.	Total.	Sheep.	Lambs.	Total.
DOUGLAS,

**ISLE OF MAN during the Three Months ended 30th SEPTEMBER, 1908,
EMBARKATION in IRELAND.**

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	IRISH PORTS.
Fat.	Stores.	Total.		Stal- lions.	Mares.	Geld- ings.	Total.				
.	13	23	36	.	.	1,687	BELFAST.
.	1	.	1	.	.	2,430	DUBLIN.
.	14	23	37	.	.	4,117	TOTAL.

**ISLE OF MAN during the Three Months ended 30th SEPTEMBER, 1908,
in the ISLE OF MAN.**

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	ISLE OF MAN PORT.
Fat.	Stores.	Total.		Stal- lions.	Mares.	Geld- ings.	Total.				
.	14	23	37	.	.	4,117	DOUGLAS.

**ISLE OF MAN during the Three Months ended 30th SEPTEMBER, 1908,
DEBARKATION in IRELAND.**

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	IRISH PORTS.
Fat.	Stores.	Total.		Stal- lions.	Mares.	Geld- ings.	Total.				
.	1	.	1	.	.	1	BELFAST.
.	DUBLIN.
.	1	.	1	.	.	1	TOTAL.

**ISLE OF MAN during the Three Months ended 30th SEPTEMBER, 1908,
in the ISLE OF MAN.**

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	ISLE OF MAN PORT.
Fat.	Stores.	Total.		Stal- lions.	Mares.	Geld- ings.	Total.				
.	1	.	1	.	.	1	DOUGLAS.

COASTING AND

RETURN of the NUMBER of ANIMALS SHIPPED to and from Places in Ireland
of Embarkation

IRISH PORTS.	CATTLE.					SHEEP.			SWINE.		
	Fat.	Stores.	Other Cattle.	Calves.	Total.	Sheep.	Lambs.	Total.	Fat.	Stores.	Total.
Cork to Aghada Pier, .	.	.	.	7	7	78	.	78	.	.	.
" to Belfast, .	.	.	.	.	.	.	.	.	.	.	.
" to Spike Island, .	.	.	.	.	.	.	.	.	.	9	9
" to Queenstown, .	.	.	.	.	.	.	.	.	.	.	.
" to Waterford, .	.	.	.	13	13	.	.	.	.	.	.
Total, .	.	.	.	20	20	78	.	78	.	9	9
Aghada Pier to Cork, .	.	.	.	.	.	162	67	229	245	.	245
Dublin .	.	.	.	.	.	.	.	.	.	.	.
Spike Island "	.	.	.	.	.	.	.	.	.	.	.
Queenstown "	.	.	.	.	.	.	.	.	60	.	60
Waterford "	.	8	.	.	8	.	.	.	.	.	.
Total, .	.	8	.	.	8	162	67	229	305	.	305
Waterford to Ballyhaek, .	.	11	.	15	26	.	.	.	.	26	26
" to Belfast, .	.	.	.	.	.	.	.	.	.	.	.
" to Duncannon, 3	30	.	.	14	47	.	.	.	.	.	.
Total, .	3	11	.	29	73	.	.	.	.	26	26
Ballyhaek to Waterford, 2	15	.	.	.	17	100	216	316	52	4	56
Belfast to Waterford, .	1	.	.	.	1	.	.	.	.	.	.
Duncannon to Waterford, 5	.	.	.	.	5	14	10	51	383	.	383
Kilrush to Limerick, .	.	72	.	87	159	15	.	15	1,621	.	1,621
Kildysart, "	.	.	.	.	.	.	.	.	.	.	.
Glin, "	.	.	.	.	.	.	.	.	.	.	.
Portumna, "	.	.	.	.	.	.	.	.	170	.	170
Tarbert, "	.	.	.	.	.	.	.	.	8	.	8
Banagher, "	.	.	.	.	.	.	.	.	.	.	.
Total, .	.	72	.	87	159	15	.	15	1,799	.	1,799
Greencastle to Greenore, .	.	86	.	.	86	.	.	.	1	.	1
Greenore to Greencastle, .	.	.	.	.	.	.	.	.	.	.	.
Londonderry to Moville, .	.	10	.	.	10	.	67	67	.	.	.
Moville to Londonderry, 70	144	.	.	6	220	28	70	98	.	.	.
Ballina to Sligo, .	.	.	.	.	.	20	.	20	.	.	.
Belmullet " .	2	23	.	.	25	49	215	264	774	.	774
Total, .	.	2	23	.	25	69	215	284	774	.	774
Mulroy to Milford, .	.	.	.	.	.	.	.	.	.	.	.
Leithbeg to Mulroy, .	1	14	.	.	15	.	.	.	3	.	3
Mulroy to Leithbeg, .	.	5	.	.	5	.	.	.	.	.	.
Mulroy to Londonderry, .	3	.	.	.	3	.	.	.	.	.	.
Londonderry to Mulroy, .	.	.	.	.	.	.	1	1	.	1	1
Total, .	81	401	23	142	647	406	676	1,142	3,317	40	3,357

INLAND NAVIGATION.

during the Three Months ended 30th September, 1908, showing the Places and Debarkation.

Gouts.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	IRISH PORTS.
	Stallions.	Mares.	Geldings.	Total.				
.	85	Cork to Aghada Pier.
.	1	2	14	17	.	.	17	" to Belfast.
.	9	" to Spike Island.
.	" to Queenstown.
.	.	1	.	1	.	.	14	" to Waterford.
.	1	3	14	18	.	.	125	Total.
.	174	Aghada Pier to Cork.
.	Dublin "
.	Spike Island "
.	60	Queenstown "
.	.	.	1	1	.	.	9	Waterford "
.	.	.	1	1	.	.	513	Total.
.	.	.	1	1	.	.	53	Waterford to Ballyhack.
.	" to Belfast.
.	47	" to Duncannon.
.	.	.	1	1	.	.	100	Total.
.	389	Ballyhack to Waterford.
.	.	.	2	2	.	.	3	Belfast to Waterford.
.	.	2	1	3	.	.	115	Duncannon to Waterford.
.	1,795	Kilrush to Limerick.
.	Kildysart "
.	Glin "
.	170	Portumna "
.	8	Tarbert "
.	Banagher "
.	1,973	Total.
.	87	Greencastle to Greenore.
.	Greenore to Greencastle.
.	77	Londonderry to Moville.
.	318	Moville to Londonderry.
.	20	Ballina to Sligo.
.	1,063	Belmullet "
.	1,083	Total.
.	1	1	Mulroy to Milford.
.	18	Leithbeg to Mulroy.
.	5	Mulroy to Leithbeg.
.	3	Mulroy to Londonderry.
.	2	Londonderry to Mulroy.
.	1	5	19	25	.	1	5,172	Total.

RETURN of the NUMBER of HORSES EXPORTED from IRELAND through GREAT BRITAIN to the COLONIES and FOREIGN COUNTRIES during the THREE MONTHS ended 30th SEPTEMBER, 1908, showing the Ports of Embarkation in Ireland.

PORTS.	Number of Horses.			
	Stallions.	Mares.	Geldings.	Total.
Belfast,	—	96	67	163
Cork,	—	2	7	9
Dublin,	3	217	145	365
Dundalk,	—	—	—	—
Greenore,	—	220	96	316
Waterford,	2	34	48	84
Total,	5	569	363	937

RETURN of the NUMBER of HORSES IMPORTED into IRELAND through GREAT BRITAIN from the COLONIES and FOREIGN COUNTRIES during the THREE MONTHS ended 30th SEPTEMBER, 1908, showing the Ports of Debarkation in Ireland.

PORTS.	Number of Horses.			
	Stallions.	Mares.	Geldings.	Total.
Belfast,	—	40	23	63
Dublin,	43	213	173	429
Waterford,	—	—	—	—
Total,	43	253	196	492

RETURN of the NUMBER of HORSES IMPORTED into IRELAND direct from FOREIGN COUNTRIES during the THREE MONTHS ended 30th SEPTEMBER, 1908, showing the Ports of Debarkation in Ireland.

PORTS.	Number of Horses.			
	Stallions.	Mares.	Geldings.	Total.
Dublin,	—	—	—	—
Portrush,	—	—	—	—
Total,	—	—	—	—

EMIGRATION FROM IRELAND.

TABLE showing, by Destinations, the Numbers of Emigrants (Natives of Ireland) who left the Ports of Ireland during the months of July, August, and September, 1908, and the total for the Nine Months ended the 30th September, 1908; together with the total Number of Emigrants in each of the corresponding periods of the year 1907.

DESTINATION.	July, 1908.	August, 1908.	Sept., 1908.	Nine Months ended 30th June, 1908.
FOREIGN COUNTRIES :—				
America (U.S.),	708	1,183	2,186	14,051
Canada,	226	166	247	2,237
South Africa,	13	16	12	117
Australia,	50	39	55	368
New Zealand,	15	3	13	83
Other Countries,	11	13	12	97
Total,	1,023	1,420	2,525	16,953
GREAT BRITAIN :—				
England and Wales,	147	161	235	1,459
Scotland,	61	53	90	817
Total,	211	214	325	2,276
General Total for 1908, . . .	1,234	1,634	2,850	19,229
General Total for 1907, . . .	2,082	3,117	4,903	32,326

The figures are subject to revision in the Annual Report.

The figures in the above Table have been extracted from the Returns published by the Registrar-General for Ireland.

ACCOUNT showing the QUANTITIES of certain kinds of AGRICULTURAL
into Ireland in each WEEK from

ARTICLES.	WEEK ENDED				
	4th July.	11th July.	18th July.	25th July.	1st Aug.
ANIMALS LIVING—					
Horses, No.	2	.	.	.	.
FRESH MEAT—					
Beef (including refrigerated and frozen), cwt.	.	.	.	.	.
Mutton, "	135	.	.	.	.
SALTED OR PRESERVED MEAT—					
Bacon, cwt.	.	.	.	.	.
Beef, . . . . . "	.	.	.	.	.
Hams, . . . . . "	.	.	.	.	2
Pork, "	.	360	300	120	37
Meat, unenumerated, Salted or Fresh, cwt.	200	.	.	.	.
Meat, preserved otherwise than by salting (including tinned and canned), cwt.	.	.	15	.	.
DAIRY PRODUCE AND SUBSTITUTES—					
Butter, cwt.	.	.	.	.	.
Margarine, "	41	72	93	81	115
Cheese, "	9	5	.	11	.
Milk, Condensed, "	35	42	87	108	70
" Cream, . . . . . "	.	.	.	.	.
" Preserved, other kinds, . . . . . "	.	.	.	.	.
EGGS, gt. hunds.	.	.	780	1,836	.
LARD, cwt.	.	1,190	.	.	.
CORN, GRAIN, MEAL, AND FLOUR—					
Wheat, cwt.	46,500	40,500	138,600	163,100	69,100
Wheat Meal and Flour, "	3,500	60,900	2,100	7,200	6,800
Barley, "	54,000	13,200	.	.	.
Oats, "	9,900	9,100	13,200	.	.
Peas, . . . . . "	.	.	.	.	290
Beans, . . . . . "	.	.	.	.	.
Maize or Indian Corn, "	420,700	222,900	180,000	314,600	161,500
FRUIT, RAW—					
Apples, . . . . . "	.	.	.	.	.
Currants, "	.	35	35	.	.
Gooseberries, "	269	58	14	21	51
Pears, . . . . . "	.	.	.	.	.
Plums, . . . . . "	.	.	.	.	.
Grapes, . . . . . "	.	.	.	.	.
Lemons, . . . . . "	.	.	.	.	.
Oranges, . . . . . "	.	.	.	.	.
Strawberries, . . . . . "	.	.	.	.	.
Unenumerated, . . . . . "	.	.	.	.	.
HAY, tons.	.	.	.	.	.
STRAW, . . . . . "	.	.	.	.	.
MOSS LITTER, "	29	53	25	10	66
HOPS, cwt.	.	.	.	.	.
VEGETABLES, RAW—					
Onions, bushels.	.	.	.	.	14
Potatoes, cwt.	.	.	.	.	.
Tomatoes, . . . . . "	.	.	.	.	.
Unenumerated, . . . . . "	.	.	.	.	5
VEGETABLES DRIED, Preserved by Canning, cwt.	.	.	.	.	.
POULTRY AND GAME, . . . . . £	.	.	.	.	.

* This Table is confined to the Imports of certain kinds of Agricultural Produce into
to a request from this Department kindly consented to separate the Irish Imports (direct)
form of Weekly Returns.

PRODUCE Imported direct (i.e. from the Colonies or Foreign Countries)
4th July, 1908, to 26th September, 1908.*

WEEK ENDED							
8th Aug.	16th Aug.	22nd Aug.	29th Aug.	5th Sept.	12th Sept.	19th Sept.	26th Sept.
.
.	.	.	.	3,100	.	.	.
.	.	.	.	740	.	.	.
.
297	140	120	.	240	.	240	.
.
.	.	5	.	.	.	.	.
114	170	42	98	71	51	151	100
75	.	4	.	.	516	4	.
82	32	.	92	64	68	103	116
.
.	48	1,920	.	1,176	.	960	1,044
.	.	.	.	.	1,069	.	.
75,900	6,100	9,800	9,300	191,800	251,700	226,600	116,700
16,900	2,800	2,900	12,000	14,500	11,500	5,100	600
.	.	.	11,100	.	.	.	.
.	.	40	.	.	50	90	180
305,500	176,500	371,300	351,800	447,500	84,600	234,000	.
.	12	83	120	50	50	.	.
.
11	12	20	85	61	78	18	.
.	52	10	87	.	113	.	.
.
.
.
.
135	201	71	146	57	64	50	47
.
280	50	568	180	1,192	470	4,620	3,430
.	.	8	4	.	.	.	50
.
.
.

Ireland from the Colonies and Foreign Countries. The Board of Customs have in answer from those of the United Kingdom, and to supply this Department with them in the

Statistics and Intelligence Branch,
 Department of Agriculture
 and Technical Instruction for Ireland.

AGRICULTURAL RETURNS OF GREAT BRITAIN, 1908.

PRELIMINARY STATEMENT for 1908, compiled from the RETURNS collected on the 4th June; and comparison with 1907.

CROPS.

DISTRIBUTION.	1908.	1907.	Increase.		Decrease.	
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Per Cent.</i>	<i>Acres.</i>	<i>Per Cent.</i>
TOTAL AREA (excluding WATER),	56,200,006	56,200,006	—	—	—	—
TOTAL ACREAGE under all CROPS and GRASS.*	32,211,381	32,243,447	—	—	32,066	0·1
Wheat,	1,626,733	1,625,445	1,288	0·1	—	—
Barley,	1,667,437	1,712,094	—	—	44,657	2·6
Oats,	3,108,918	3,122,898	—	—	13,980	0·4
Rye,	52,744	61,211	—	—	8,467	13·8
Beans,	295,012	309,730	—	—	14,718	4·8
Peas,	163,761	166,136	—	—	2,385	1·4
Potatoes,	562,105	548,920	13,185	2·4	—	—
Turnips and Swedes,	1,550,897	1,562,978	—	—	12,081	0·8
Mangold,	427,772	450,053	—	—	22,281	5·0
Cabbage,	69,123	74,896	—	—	5,773	7·7
Kohl-Rabi,	17,252	20,687	—	—	3,435	16·6
Rape,	86,495	91,272	—	—	4,777	5·2
Vetches or Tares,	126,083	154,056	—	—	27,973	18·2
Lucerne,	65,157	63,795	1,362	2·1	—	—
Other Crops,	115,119	121,496	—	—	6,377	5·2
Clover and Rotation Grasses, {	For Hay,	2,232,353	2,250,319	—	17,966	0·8
	Not for Hay,	2,189,234	2,240,642	—	51,408	2·3
TOTAL,	4,421,587	4,490,961	—	—	69,374	1·5
Permanent Grass,* {	For Hay,	4,949,879	4,936,051	13,228	0·3	—
	Not for Hay,	12,466,990	12,341,233	124,757	1·0	—
TOTAL,	17,415,869	17,277,284	137,985	0·8	—	—
Flax,	286	372	—	—	86	23·1
Hops,	38,916	44,938	—	—	6,022	13·4
Small Fruit,	84,873	82,175	2,698	3·3	—	—
Bare Fallow,	315,252	261,450	53,802	20·6	—	—
Orchards,†	250,288	250,176	112	0·0	—	—

* Excluding 12,801,883 acres returned as Mountain and Heath Land used for grazing in 1908, and 12,742,779 acres in 1907.

† The acreage of any Crop or Grass grown under the trees in Orchards is also returned under its proper heading.

PRELIMINARY STATEMENT for 1908, compiled from the RETURNS collected on the 4th June; and comparison with 1907—*continued*.

LIVE STOCK.

DISTRIBUTION.	1908.	1907.	Increase.		Decrease.	
	No.	No.	No.	Per Cent.	No.	Per Cent.
Horses used for Agricultural purposes.*	1,119,824	1,115,927	3,397	0.3	—	—
Unbroken Horses:—One year and above,	599,809	313,952	—	—	14,143	4.5
" " Under one year,	126,538	126,490	48	0.0	—	—
TOTAL OF HORSES, . . .	1,545,671	1,556,369	—	—	10,698	0.7
Cows and Heifers } In Milk,	2,197,763	2,198,213	—	—	450	0.0
} In Calf but not in Milk, . .	566,017	561,033	4,984	0.9	—	—
Other Cattle :—Two years and above,	1,371,688	1,388,941	—	—	17,253	1.2
" " One year and under two,	1,415,483	1,440,114	—	—	24,931	1.7
" " Under one year, . . .	1,354,183	1,323,466	30,717	2.3	—	—
TOTAL OF CATTLE, . . .	6,905,134	6,912,067	—	—	6,933	0.1
Ewes kept for Breeding, . . .	10,489,089	10,277,140	211,949	2.1	—	—
Other Sheep :—One year and above, .	5,632,767	5,193,597	439,170	8.5	—	—
" " Under one year, . . .	10,917,874	10,644,718	273,156	2.6	—	—
TOTAL OF SHEEP, . . .	27,039,730	26,115,455	924,275	3.5	—	—
Sows kept for Breeding, . . .	369,476	380,267	—	—	10,791	2.8
Other Pigs,	2,454,006	2,256,499	197,507	8.8	—	—
TOTAL OF PIGS, . . .	2,823,482	2,636,766	186,716	7.1	—	—

* Including Mares kept for Breeding.

BOARD OF AGRICULTURE AND FISHERIES,
3, St. James's Square, S.W.,
September, 1908.

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DEPARTMENT ~~OF~~ AGRICULTURE
AND
TECHNICAL INSTRUCTION FOR IRELAND.

JOURNAL.

Meeting of the Council of Agriculture—The Vice-President's Address—Tobacco-Growing in Ireland—Demonstration Plots in Congested Districts—Protection of Woodlands in Ireland—Early Potato Growing—Displays of Irish Agricultural Produce in the United Kingdom in 1908—Flax Experiments, 1907—Field Experiments, 1908;—Barley, Meadow Hay, Potatoes, Mangels, Oats, Turnips and Wheat—Official Documents—Notes and Memoranda—Statistical Tables.

NINTH YEAR.

No. 2.

JANUARY, 1909.



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PRICE SIXPENCE,

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NOTICE.

Communications respecting the literary contents of this JOURNAL should be addressed to the Superintendent of the Statistics and Intelligence Branch, Department of Agriculture and Technical Instruction for Ireland, Upper Merrion-street, Dublin.

Communications respecting Advertisements should be addressed to ALEX. THOM & Co. (LIMITED), MIDDLE ABBEY-STREET, DUBLIN ; or to LAUGHTON & Co. (LIMITED), 3 WELLINGTON-STREET, STRAND, LONDON, W.C., and not to the DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND:

THE COUNCIL OF AGRICULTURE,

The fourteenth meeting of the Council of Agriculture was held on Tuesday, 24th November, 1908, in the Royal University of Ireland, Earlsfort-terrace, Dublin.

The chair was taken at 11 o'clock by the Right Hon. T. W. Russell, M.P., Vice-President of the Department.

The following were present:—

Representing the Department.—The Vice-President; Mr. T. P. Gill, Secretary; Mr. J. R. Campbell, Assistant Secretary in respect of Agriculture; Rev. W. S. Green, Chief Inspector of Fisheries; Mr. R. Cantrell, I.S.O., Chief Clerk; Mr. W. G. S. Adams, Superintendent of the Statistics and Intelligence Branch; Mr. J. S. Gordon, Chief Agricultural Inspector; Mr. J. P. Walsh, Clerk in Charge of Accounts; Mr. J. D. Daly, Senior Staff Officer; Mr. T. Butler; Mr. J. V. Coyle; Mr. A. Kelly; Mr. John Hogan; Mr. H. G. Smith; Mr. R. H. Lee; and Mr. E. O'Neill.

MEMBERS OF COUNCIL, ACCORDING TO PROVINCES.

Leinster.

Robert A. Anderson; Gerald J. Brenan, J.P.; Algernon T. F. Briscoe, J.P.; Stephen J. Brown, J.P.; Captain Loftus A. Bryan, J.P., D.L.; Thomas M. Carew; Denis J. Cogan; Major J. H. Connellan, D.L.; William M. Corbet, Thomas W. Delany; Robert Downes, J.P.; Colonel Nugent T. Everard, H.M.L.; James Galvin; Patrick Hanlon; Patrick J. Kennedy, J.P.; James M'Carthy, J.P.; George F. Murphy, J.P.; Patrick J. O'Neill, J.P.; Charles H. Peacocke, J.P.; Henry Reynolds; William R. Ronaldson; James Mackay Wilson, J.P., D.L.

Ulster.

The Right Hon. Thomas Andrews, P.C., D.L.; Frank Barbour; H. D. M. Barton, F.S.I.; Rev. E. F. Campbell, M.A.; Alexander L. Clark, J.P.; George Knox Gilliland, J.P., D.L.; Robert T. Huston, M.R.C.V.S.; John Keenan, J.P.; John S. F. M'Cance, J.P.; Thomas A. M'Clure, J.P.; The Right Rev. Monsignor

M'Glynn, P.P., V.G. ; T. P. M'Kenna, J.P. ; H. de F. Montgomery, D.L. ; Rev. Laurence O'Ciarain, P.P. ; Alexander Robb, J.P. ; Colonel R. G. Sharman-Crawford, J.P., D.L. ; William Smyth, J.P. ; Captain T. Butler Stoney, J.P., D.L. ; Thomas Toal, J.P.

Munster.

James Byrne, J.P. ; Captain William C. Coghlan, J.P. ; Thomas Corcoran, J.P. ; Edmond Cummins, J.P. ; Thomas Duggan ; William M'Donald, J.P. ; Michael Mescal, J.P. ; Patrick Moclair ; The Right Hon. Lord Monteagle, K.P., D.L. ; Michael J. Nolan, J.P. ; Cornelius O'Callaghan, J.P. ; William W. O'Dwyer, J.P. ; David Leo O'Gorman ; George O'Gorman ; Hugh P. Ryan ; Timothy Sheehy ; George F. Trench, J.P.

P. J. Costello, J.P. ; Rev. Joseph G. Digges, M.A. ; John Galvin ; Thomas G. Griffin ; James P. MacGuire ; Rev. P. M'Loughlin, P.P. ; Colonel John P. Nolan, J.P.

Mr. J. D. Daly acted as Secretary to the meeting.

The minutes of the thirteenth meeting, 19th May, 1908, a copy of which had been sent to each member of the Council, were taken as read, and were signed as correct.

The Vice-President delivered his address.*

Mr. Downes asked the Vice-President to invite the Leinster members of the Council to meet when the business of the Council was finished, in order that they might discuss the question of the site of the proposed Agricultural School for Leinster.

The Vice-President said that if they so desired, the Leinster members could meet after the adjournment either in the Council room or at the offices of the Department.

The following resolution was proposed by Mr. John Galvin and seconded by Mr. James P. MacGuire:—

“ That in the opinion of this Council the limits of expenditure of a County Committee on live stock and farm and cottage prizes are undesirable.”

Mr. Campbell pointed out some objections to the suggestion contained in the resolution. He thought it would be better at the present juncture to consider whether some economy could not

* See pp. 208 *et seq.*

be effected in the Live Stock Schemes, whereby the sum now allocated for them might be made to produce a greater benefit to a larger number of stock owners.

After some discussion the Vice-President said that the whole question of the allocation of funds for County Schemes would, in a short time, be under the consideration of the Department and the Agricultural Board. In these circumstances he would suggest that the resolution should be withdrawn.

Mr. Galvin accepted the Vice-President's suggestion, and the resolution was accordingly, by leave, withdrawn.

The following resolutions were proposed by Mr. D. J. Cogan and seconded by Mr. W. W. O'Dwyer:—

(i.) "That clause 10 of the Live Stock Schemes (Horse-breeding, Registration of Stallions) be amended so as to read:—

'Thoroughbred stallions calculated to produce weight-carrying hunters and high-class harness horses may be registered for any county in Ireland.'

(ii.) "That the following paragraph be added to the Scheme:—

Premium to Mares.—A County Committee may, out of the joint funds provided for the improvement of live stock, give a premium of £5 to the best three-year-old mare shown at each of the local exhibitions of mares holden in the county in each year, provided such mare is by a thoroughbred sire, is free from hereditary disease, and is likely to breed weight-carrying hunters or high-class harness horses, and that she will be put to a thoroughbred registered sire, such premium to be paid to her owner if she produces a foal in the following spring, but not until then. The same mare to be entitled to a like premium in the following year, subject to the same conditions. Preference to be given to mares whose owners' rateable valuation does not exceed £50."

After some discussion the first resolution was put, and passed unanimously.

On the suggestion of the Vice-President, and with the assent of the mover and seconder, it was decided to refer the second resolution to the Advisory Committee on Horse-breeding.

The following resolution was proposed by Captain William C Coghlan, seconded by Mr. Wm. R. Ronaldson, and passed unanimously:—

"That the Department ascertain, as early as possible, the proposals of the Government with regard to encouraging the breeding of army remounts, and take steps to see that Ireland's claims are not overlooked."

The Vice-President explained the steps that he had already taken in connection with this matter.

Captain Loftus Bryan suggested that Ireland's share of the grant should be in proportion to the number of Irish horses supplied for Army Remounts.

In the course of the discussion on the resolution, suggestions were made that the Remount Department should purchase horses direct from the farmer.

These suggestions were noted.

The following resolution was proposed by Rev. J. G. Digges, M.A., and adopted:—

“ That this Council desires to express the warmest appreciation of the Vice-President's action in the matter of Foul Brood Disease, and to thank him for the promptitude, perseverance, and skill with which he introduced and conducted through Parliament the Bee Pest Prevention (Ireland) Bill, 1908.”

The following resolution was proposed by Colonel N. T. Everard, seconded by Colonel Sharman-Crawford, and passed unanimously:—

“ That in view of the fact that the Acts prohibiting the cultivation of Tobacco in Ireland have been repealed by the Irish Tobacco Act of 1907, we submit that the imposition of a crushing duty upon Irish Tobacco while the industry is still in its infancy is contrary to the spirit and intention of the Act.”

The Vice-President explained that the Chancellor of the Exchequer had arranged that instead of the rebate, to the extent of one-third of the duty, which was allowed at present to persons permitted to cultivate tobacco for experimental purposes, a sum of £6,000 would be placed at the disposal of the Department in the next financial year, and subsequently up to 1913, for the encouragement of the tobacco industry in Ireland. The Council would understand that in view of this arrangement the Department could not see their way to support the resolution when sending it forward to the Chancellor of the Exchequer.

Mr. Thomas Toal called attention to the question of the withdrawal of the grant from the Monaghan Agricultural School, the reasons therefor, and the subsequent negotiations; and asked the Vice-President whether provision would be made for the renewal of the subsidy next year.

The Vice-President explained at some length the action of the Department in regard to this school, and the reasons why it was found impracticable to continue the subsidy.

Rev. L. O'Ciarain also spoke on the subject.

The Council then passed to the next business on the agenda paper.

The following resolution, standing in the name of Mr. William Field, M.P., was proposed by Captain Loftus Bryan and seconded by Mr. Huston:—

“ That we call upon the Legislature to pass an Act giving powers to the Department of Agriculture in Ireland to prohibit any sire—save certain excepted thoroughbreds—bull, ram, or boar, from doing service in public for a fee, unless they have been passed up to a certain standard of excellence, and registered by local authorities; also, that supervision should be exercised to prevent breeding from old worn-out animals, or those suffering from organic disease.”

The Vice-President said that, while he was in sympathy with the proposal, he could hold out no hope of obtaining the legislation necessary to give effect to it.

After some discussion, Captain Bryan asked leave to withdraw the resolution.

The resolution was accordingly, by leave, withdrawn.

The following resolution, standing on the agenda paper in the name of Mr. William Field, M.P., was moved by Mr. Stephen Brown, seconded by Mr. P. J. O'Neill, and passed unanimously:—

“ That we call upon the Treasury to take immediate measures to carry into effect the recommendations of the Departmental Committee on Irish Forestry, and we strongly protest against any further delay, especially as there is urgent need for employment.”

The following resolution, standing on the agenda paper in the name of Mr. William Field, M.P., was proposed by Mr. James M'Carthy and seconded by Mr. Wm. R. Ronaldson:—

“ That we suggest that a measure should be introduced into Parliament to make it an offence for the holders of lands in Ireland to allow noxious weeds to grow freely upon their holdings, which are detrimental to themselves and their neighbours, and that if, after due notice has been given by the local authority, the weeds are neither destroyed nor removed, the said offence shall be punishable by fine.”

The following resolution on the same subject, standing on the agenda paper in the name of Mr. Ronaldson, was also considered :—

“ That the Department of Agriculture be requested to take whatever steps may be necessary to secure the compulsory destruction of noxious weeds.”

After some discussion, the Council decided to substitute Mr. Ronaldson's resolution for that put forward by Mr. Field.

Mr. Ronaldson's resolution was accordingly put, and passed unanimously.

The following resolution was proposed by Mr. T. P. M'Kenna and seconded by Mr. P. J. O'Neill :—

“ That in order to make the information regarding the dipping of sheep more reliable, and, at the same time, save owners unnecessary trouble, the Council recommends an alteration of the regulations under the Sheep Dipping (Ireland) Order, 1907, providing for the substitution in all or certain counties of the certificate of Inspector of the Local Authority :—Form D (Article 10) for Form B (Article 6) and Form C (Article 9).”

Mr. Gill said that the matter was a technical one, and was scarcely suitable for discussion by the Council. The Department would give Mr. M'Kenna's suggestion careful consideration and would see how far it would be practicable to meet his views. In these circumstances he would suggest that the resolution should be withdrawn.

Mr. M'Kenna accepted this suggestion, and the resolution was accordingly, by leave, withdrawn.

The following resolution was proposed by Mr. T. P. M'Kenna and seconded by Mr. Toal :—

“ That the Council of Agriculture considers it unfair to the makers of hand-made butter and home dairying to have the same standard (16 per cent. of water) fixed for all butter, creamery or hand-made; and that, in the case of hand-made butter, the standard should be fixed at 18 per cent. at least.”

The Vice-President pointed out some serious objections to the proposal contained in the resolution, and after some discussion, Mr. M'Kenna asked leave to withdraw it.

The resolution was accordingly, by leave, withdrawn.

The following resolution proposed by Mr. James Byrne, J.P.,

seconded by Colonel Sharman-Crawford and supported by Mr. R. T. Huston, was passed unanimously:—

“ That as much divergence of opinion exists as regards the cause and nature of that very prevalent disease in cattle known as Redwater, it be a recommendation from this Council that the Principal of the Royal Veterinary College be requested to investigate the matter with a view to its abatement.”

Colonel Sharman-Crawford called attention to the continued practice of illegal trawling in Dundrum Bay, County Down, and moved:—

“ That a resident official of the Fishery Branch of the Department be appointed in the district concerned therein.”

The resolution was seconded by Mr. W. Smyth.

At the request of the Vice-President, Mr. Green, Chief Inspector of Fisheries, explained the action taken by the Department in this matter. The Department would do all they could to check the practice complained of, but he did not think that it was necessary to appoint a resident official.

Thereupon Colonel Sharman-Crawford asked leave to withdraw the resolution.

The resolution was accordingly, by leave, withdrawn.

The following resolution, standing on the agenda paper in the name of Mr. R. T. Huston, M.R.C.V.S., was not moved.

“ That owing to the enormous annual loss sustained by the stock-owners of this country, not only through death, but depreciation in value, of the herds brought about by the increasing ravages of germ diseases, this Council is of opinion that the time has arrived when there should be a sufficiently endowed research laboratory established in Ireland by the Department of Agriculture, feeling, as they do, that we are quickly moving into an age when preventive ought largely take the place of curative treatment for many diseases affecting our domesticated animals.”

The Council adjourned.

THE VICE-PRESIDENT'S ADDRESS TO THE COUNCIL OF AGRICULTURE,

MY LORDS AND GENTLEMEN,—This Council, as at present constituted, may be said to complete its statutory term of existence to-day, and I therefore address what may be called a moribund body. Before another meeting takes place it will be the duty of the County Councils throughout Ireland to elect their representatives to the Council, and the Department will likewise have to make its nominations for the next triennial period. Both these important duties will require careful attention and consideration.

AN ENCOURAGING OUTLOOK.

We are at a critical stage in our national life. Every indication goes to show that we are entering upon an era of potential intellectual and material development and progress. What with the rapid reform of the land system, the gratifying utilisation of the educational facilities afforded by the Department, and the institution of a new system of higher education, we have at last got a substantial share of the shaping of our destinies in our own hands; and it rests with ourselves, and ourselves alone, to make or mar a future pregnant with promise. If I were to judge of how we shall acquit ourselves by my experience as Vice-President of the Department, the outlook indeed is an encouraging one. Our schemes both of agriculture and of technical instruction are being more and more availed of, and there cannot be the slightest doubt that a solid and substantial advance is being achieved.

TRANSITION STAGE IN IRISH AGRICULTURE.

The agriculture of the country is, however, to a certain extent in a transition stage. The rapid transfer of the land to occupying owners, the creation of economic holdings in the West, the return of many of the evicted tenants to the land from which they have long been separated, the great increase in the number of labourers' plots owing to the success of the Labourers' Acts, ought in themselves to inspire us with a wholesome appreciation of the magnitude of the work that lies before us. Most of the tendencies are, I am glad to say, in the right direction; and with continued effort on the part of the Department, and the intelligent utilisation and administration of the Department's schemes

by the local committees, there can be little question that the next three years will witness a continued and considerable improvement in all the branches of the work now being carried on.

DEPARTMENTAL LEGISLATION IN PAST SESSION.

In my address to you twelve months ago I pointed out the urgent necessity which existed for Departmental legislation in more than one direction. I enumerated some eight or nine matters in regard to which the want of legislation seriously crippled and retarded our work. In a crowded Session, such as the present has been, it was not an easy matter to get attention for the small Bills dealing with the several matters involved. With Old Age Pensions, New Universities, Licensing and Education—to mention only the more contentious items in the programme of a record Session for legislative achievement—it was next to impossible to get a hearing for such trifles as Bee Pest, Whaling Stations, and an amendment of the Grand Jury Laws relating to piers and harbours. With the hearty co-operation of the Chief Secretary, however, I managed to get the necessary Bills passed, and the settlement of these three questions will greatly facilitate our work.

PROPOSED LEGISLATIVE MEASURES FOR NEXT SESSION.

During the next Session, which will shortly open—the interval is not great between Parliamentary Sessions nowadays—I hope to deal with several other matters of a like character. There is, for example, the question of securing more authoritative and complete statistics of Irish exports and imports. The partial and tentative returns we have so far been able to compile are greatly appreciated, but legislation is required in order to make them more truly indicative of the movements of Irish trade. Then there is the necessity of amending the Fertilisers and Feeding Stuffs Acts with a view to dealing more effectively with the adulteration of these articles, a matter of enormous importance to the farming industry. There is a fishery Bill dealing more particularly with the close time for salmon. And there is the amendment of the Merchandise Marks Act. Prosecutions under this Act have now to be undertaken by the Board of Trade, with consequent great loss of time and divided responsibility; and there is no apparent reason why we should not be enabled to do our own work in this direction. I can only hope that the fates may again be propitious, and that, carrying these measures, I shall

have equipped the Department, so far as any needed Departmental legislation is concerned, with the means for carrying on its operations with the fullest possible efficiency.

THE PATENTS AND DESIGNS ACT, 1907.

During the Session of 1907 a measure termed the Patents and Designs Act was passed by Mr. Lloyd George, then President of the Board of Trade. This Act has had rather a far-reaching effect, and one not at first foreseen. Under it the holders of foreign patents in the United Kingdom, after due notice, are compelled to carry on their manufactures in these islands or forfeit their patent rights. When the Act was passed it was at once seen that the effect would be to compel the holders of these patents to establish manufactories in Great Britain or in Ireland. It is possible, and, indeed, I think probable, that the effects of the measure in this respect have been overestimated; but already a considerable number of factories have been established in England, and negotiations in a great many cases are proceeding with a view to the assignment of the patent rights affected to English manufacturers. The Department, feeling that Ireland offered certain advantages for work of this nature, have co-operated with the various Industrial Development Associations in the country with a view to attracting manufacturers to Ireland. In order that this work might be efficiently done at first hand, the Department appointed a small commission consisting of Mr. Fletcher, the Assistant Secretary in respect of Technical Instruction, Mr. Riordan, Secretary to the Cork Industrial Development Association, and Mr. Horner, of the Belfast Industrial Development Association, to proceed to Germany and confer with the Consuls of the United Kingdom there, and with the manufacturers likely to be affected by the Patents Act. Their work in Germany is hardly yet completed, and I can only say at this stage that the report which it will be their duty to make will have the most careful consideration of my colleagues and myself.

THE POTATO CROP.

Since the last meeting of the Council another harvest has been gathered in. What would otherwise have been a good year was, unfortunately, marred by the bad weather which prevailed for the early harvest. The recent fine weather, however, though it came too late for the corn crop, has proved excellent for roots and late grazing, and, therefore, for wintering stock generally.

We have to attach great importance to the potato crop in this country, for over a large area it is still the main food of the people. Fortunately, the report on this year's potato crop is favourable, even in the western districts, and, if the crop is not left too long in the ground, we should be safe from all danger of want or the need for Seed Loans.

BENEFICIAL ACTION OF DEPARTMENT.

In the West, the excellence of the crop is largely to be attributed to the operations which were undertaken at the instigation of the Department. During the spraying season the Department had thirty-eight overseers engaged mainly in the Congested Districts in the sale of spraying machines and materials, and demonstrating how to mix and apply the spray. One thousand three hundred and eighty machines were sold this year at reduced prices, and these, added to the 1,259 machines which were sold last year, making a total of 2,639 sold in two years, together with the 1,100 which were repaired by your officers, have proved of the greatest service in the saving of the crop.

QUALITY OF SPRAYING MATERIALS.

Notwithstanding that the Department were anxious to avoid as far as possible interfering with private enterprise, they have found it necessary to sell at cost price, in remote and backward districts, some 107 tons of spraying material. Owing to the efforts of the Department's overseers and the facilities afforded for the analysis of spraying material, it is gratifying to be able to state that last year few, if any, defective spraying materials or mixtures were sold in these poor districts. The Department regret, if in the effort to secure the use of none but the cheapest and purest spraying materials there should have been interference in any way with the sale of proprietary mixtures, which, however good in themselves, are more costly and less reliable than the pure unmixed materials. The justification which the Department have in interfering in this matter is that the potato crop of the poor peasants is too important to warrant the running of any risks or the use of anything but the very best materials, which, after all, are the cheapest. Never since spraying was introduced into Ireland has there been so much done as during last season, and one can only hope that the instruction which has now been brought almost to everybody's door will continue to bear fruit in future years.

BOXING OF SEED POTATOES.

In addition to these efforts to protect the potato crop from blight, reference should be made to the influence on the crop of the system of boxing seed potatoes which was introduced by the Department some years ago. As is well known, the early potato cannot be grown satisfactorily without the application of this method, and the Department have sought to apply it to the late crop also. The results of the numerous experiments made during the last four years show that where boxing late varieties has been adopted there has been an average increase of about two tons per statute acre. Last year the Department made an effort to introduce this system into the congested area among the small occupiers. Some 10,000 boxes were sent out at a nominal charge for experimental purposes, and experience shows that this method is as marked in its results in the West as in the rest of the country. The Department is now endeavouring to introduce a more extensive use of these boxes. There is a three-fold advantage in their use in the West. A larger crop will be secured; in the wet bogs planting need not be done so early; while the crop is earlier and better grown when the disease appears and less liable to be attacked. Those who have not yet adopted this system should not fail to study the results of the series of experiments which have been made by the Department's officers, to be obtained on application to the Secretary.

SPECIAL SCHEMES FOR CONGESTED DISTRICTS.

There is one matter connected with the Department's work in the West of Ireland which it is proper that I should bring before the Council of Agriculture. The Department's Endowment was originally given for non-congested areas, but since 1904 these Congested Districts were brought within the purview of the Department and the County Committees. Towards this extension of the work the Congested Districts Board make an annual grant of £2,000, but this sum is not sufficient to cover the cost of the extension of the County Schemes to these districts. Owing to the poverty of the West it has been found necessary to spend large sums of money on special Schemes directly under the Department, the expenditure on which now amounts to £10,000 per annum, a sum which it must be remembered is voted by the Agricultural Board out of money which was given them for the benefit of non-congested areas. The Board vote this money to

mark their appreciation of the needs of the districts referred to, but at the same time they have not failed to impress upon the Government the fact that the Endowment having been given for non-congested districts, the cost of special work in the congested areas should be found from other sources. The last grant of the Board, taken from the reserve fund, in respect of this work, will be exhausted on 31st December next, and it cannot be expected that they should year by year repeat it, as their funds will not long stand the annual depletion of £10,000 for the special schemes.

PROVISIONS OF NEW LAND BILL IN REGARD TO AGRICULTURAL WORK IN CONGESTED AREAS.

The new Land Bill, which was introduced into Parliament last night by the Chief Secretary, provides for the transfer to the Department of all agricultural development work in the congested areas. It makes no provision for additional funds being provided for the Department, but the Chief Secretary gave the assurance during his speech that whatever sum is deemed necessary for these special Schemes will be added to the Endowment Fund of the Department. With this assurance it will be necessary to ask the Agricultural Board for a further grant to carry on the work; but I take this opportunity of saying that, should the Bill not become law next Session, the Board cannot continue this grant unless special funds are provided by the Treasury.

BLACK SCAB IN POTATOES.

It having come to the knowledge of the Department that a destructive potato disease had appeared in several counties in England and Scotland, prompt steps were taken to issue an Order under the Destructive Insects and Pests Acts, making notification of the existence of the disease in Ireland compulsory and giving powers for the suppression of any outbreak. The Department have made very full investigations, and, with the exception of three spots in the east of County Down, no trace of this disease can be found. With this exception, it may confidently be asserted that Ireland is free from the disease. The outbreak in County Down, fortunately, is not serious, being confined in one case to gardens attached to a Coastguard Station, and in the others to two fields and to one variety of potato. Measures were immediately taken to isolate these districts and to deal effectively with the crops, so as to prevent the spread of the disease.

There is in the North of Ireland an important seed trade with Malta at this time of the year. The Maltese authorities, on

account of the existence of Black Scab in Great Britain, have prohibited the importation of seed potatoes into Malta from that country. The efforts of the Department and the guarantee of this country being practically free from the disease have secured for Ireland freedom to export seed potatoes to Malta under Departmental supervision, which has been freely granted to shippers.

For the future it behoves everyone to do his utmost to see that this disease does not spread in Ireland. Suspected cases should be at once reported to the Department and specimens of the suspected tubers submitted for examination, so that, should the disease appear in any new district, it may be at once exterminated. Above all, care should be taken this year in the importation of seed from Great Britain. The Department have been asked to prohibit entirely the importation of seed potatoes. This, however, is a measure which should be undertaken only as a last resort; but if the necessity arise the Department will not shrink from this duty.

PRECAUTIONS AGAINST FOOT AND MOUTH DISEASE.

Within the past few days Foot and Mouth disease is officially reported to have made its appearance in the United States, and, I am sorry to say, later reports show that it has spread from the State of Pennsylvania, where it appears to have originated, to other States. On receiving information of the outbreak, the Department at once issued an Order prohibiting the importation of hay and straw from any part of the United States. It was not necessary to prohibit the import of cattle, no cattle coming to Ireland from the American continent. The effect of such an outbreak amongst the herds of America cannot fail to have serious effects not only in the States, but also in this country. The primary duty of the Department, however, is strictly limited to seeing that everything possible is done to bar the entrance of disease into Ireland; and I am happy to be able to assure the Council that everything within the legal powers of the Department has been, and will continue to be, done in the matter. I cannot refrain from adding here that the main ground of opposition to the free import of Canadian stores receives a strong justification by this outbreak. It has always been the contention of those who opposed the opening of our ports for this purpose that the danger of disease either from Canada or from the United States was overwhelming. And events have vindicated the attitude adopted by the agriculturists of Ireland.

AGRICULTURAL EDUCATION.

The question of agricultural education continues to receive the best consideration of the Department. Since the last meeting of the Council I have received numerous deputations representing various County Committees, who are all evidently impressed with the importance of this form of education; and many of them desire to see some more permanent institutions. But the subject is beset with many difficulties, the least of which is the provision of the capital expenditure in acquiring land and erecting suitable buildings thereon. The selection of suitable centres, the maintenance of the schools when started, the question whether they would be frequented by the right class of boys, the present lack of a sufficient number of experienced teachers, and, above all, the scarcity of labour—which makes it next to impossible for the working farmer to spare his son from assisting on his own farm, except for part of his time in the winter months—all these are factors in the situation that have to be very carefully considered. Having heard the views of representatives of the various parts of the country, and having taken full account of all these difficulties, I now propose to discuss the whole question at the forthcoming meeting of the Agricultural Board, and, with their assistance, to arrive at some action which it is to be hoped will be acceptable to all concerned.

VALUE OF WINTER CLASSES.

But before leaving the question of agricultural education, I may say there is one feature of it about which there is happily no doubt whatsoever. I refer to the Scheme for Winter Classes, which was adopted by only thirteen counties last year, and which has now been taken up by twenty-six counties. Every county in which this Scheme has been steadily and earnestly worked has the most encouraging reports to make of it. Testimonies in regard to its value come to the Department from every direction. Even in Great Britain, where a Departmental Committee recently inquired into the system of agricultural education suited to rural districts, they have come to the conclusion that the Irish system of Winter Classes is the one most to be recommended, and they propose its being followed in England and Wales. The value of these classes cannot be overestimated, and it is most satisfactory that the County Committees throughout the country are falling into line in the promotion of this invaluable form of agricultural education. As another evidence of the utility of our work, I

may add that a member of the Government recently informed me that a course of 100 lantern lectures, depicting the work of the Department, was about to be delivered throughout the length and breadth of Scotland. All this is highly encouraging, and should stimulate us to steady perseverance in the sometimes dull and always arduous work of fostering and developing what is, and ever will be, the main source of our national wealth.

ECONOMIC HOLDINGS AND LABOURERS' PLOTS.

A matter of much importance in regard to the creation of small holdings is now being pressed upon the attention of the Department. There are thousands of labourers' plots, of economic holdings formed by the Estates Commissioners, and of holdings upon which evicted tenants have been placed, which urgently require attention. As to the first class, that of labourers' plots, representations have been made to the Department for assistance to be given to the labourers in regard to their cultivation. In some parts of the country these plots are a credit to the labourers occupying them. The cottages and the plots are beginning to give a new tone to rural life. I have myself seen as many as eight or nine different kinds of vegetables cultivated on the half-acre: and fruit schemes are being availed of by very many labourers. But as regards the greater number of the plots, they simply are potato patches indifferently cultivated. The case of the restored evicted tenant is even worse. Many men who have been out of their holdings for long years, and who have not been improved by their enforced alienation from the land, are being placed on holdings of 20, 25, and 30 acres. This is generally—and as I think erroneously—held to be the minimum of an economic holding. In large numbers of cases the new occupiers have neither the capital nor the knowledge required for the cultivation of such a holding, and what frequently happens is that a small part is tilled and the greater part is let to graziers. Precisely the same thing is true of the economic holdings being created for other tenants by the Estates Commissioners. All this work is genuinely good and necessary work, but surely nobody ever intended that we were to abolish ranches in order to establish small grazing farms. No doubt the one is an improvement upon the other, but the Department feel that on these holdings there is a special call for exactly that form of agricultural instruction which it is in our power to give. These struggling men, emerging out of difficulties and trials, ought to be instructed and helped; and should the finance

arrangements of the new Land Bill provide for it, there ought to be a special effort and a special plan for dealing with these holdings.

PROTECTION AGAINST FRAUD IN GREAT BRITAIN IN REGARD TO IRISH PRODUCTS.

I have frequently referred to the two agencies which the Department have in Great Britain, the one for advancing a knowledge of the quality of our produce, and the other for preventing frauds in connection therewith. Both continue to do excellent work in their respective spheres. Last week in London I witnessed at the Aonach of the Gaelic League a very fine illustration of the former class of work. But it is a melancholy thing to have to say that a country so relatively poor as Ireland should annually have to spend a considerable sum of money to detect fraud effected by means of the adulteration and false representation of Irish goods by English and Scottish traders. In all the great centres of population fraud of this character is unblushingly practised to an extraordinary extent. Margarine is sold as Irish butter, cheap American bacon is labelled and sold as Irish, foreign eggs and fowl are similarly misdescribed; and even Irish linen, an article known throughout two hemispheres, is fraudulently imitated. It is, of course, impossible for the Department, whose resources are all too limited, to cope fully with an evil of this magnitude. All that is possible, however, is being done. What is practically a branch of the Department's work has been established in England, and some seven or eight inspectors are at work in detecting and bringing before the Courts the more flagrant cases of fraud. It is not the small trader only who is guilty of these frauds. Traders of the highest repute have been convicted of them during the past year, and I feel bound to say that, on the whole, the Courts take a serious view of the offence, and penalties which ought to be deterrent are enforced. Believing that good work was thus being done on behalf of Irish manufactures and Irish trade, I have, during the past six months, increased the staff by three assistants, and detailed a linen expert, who was already in the Department's service, to deal specially with the question of the fraudulent imitation of Irish linen. The latter arrangement was made at the urgent request of the Linen Merchants' Association in Belfast.

IRISH FISHERIES.

Coming to the work of the Fisheries Branch, the outlook is not so satisfactory, though it is something to have to say that in a

few directions there is some progress to report.

MACKEREL AND HERRING FISHERIES.

The mackerel and herring fisheries are the most important sea fisheries of Ireland. With regard to the former, it was originally almost wholly in the hands of Manxmen and other visitors to our coasts. Now, however, it has practically passed into the hands of Irish fishermen. Owing to changes in the fish trade, prices are not what they were in the early years of the industry; and there seemed for some years to be a falling off in the supply. But the season which closed in July last showed a great improvement on the past few years. Some of our mackerel go fresh to the English markets, but most of it is cured and exported in barrels to America, where, unfortunately, it has to face the heavy duty of 8s. a barrel. With regard to herrings, though these fish do not come on our coasts in the countless billions that visit the North-east of Scotland, those that do come are the best class of herrings in the world; and, consequently, Irish herrings are always at the top in the foreign markets.

MOTOR FISHING BOATS.

Steam power has come into all branches of the fishing industry, but the Department are of opinion that in the paraffin motor engine lies the means by which our local fishermen may hold their own in the general competition with which they have to contend. The Department have issued several loans to fishermen to provide motors for their boats, and one motor fishing boat, built in Arklow to the order of the Department, has had a most successful year's fishing. On the wild coast of Donegal she kept the sea and caught fish when the steam drifters costing three times as much had to run to port for shelter; and so far she has not only paid the instalments that have fallen due, but also those in advance up to April next. Her Arklow crew are exceptionally good workers, but there is no reason to doubt that what this boat has done might also be done by others who adopt this means of capturing the harvest of the sea. On the whole of the east coast the herring fishery seems to be improving, and better boats are being acquired.

The Department's dredger has so far improved Arklow Harbour that now it is always open, whereas it was subject to periodic closure by sand when the work of dredging was undertaken. At Tramore a fine new pier has been completed, in co-operation with the County; and many other minor works have been carried out elsewhere. But works of this kind need much money, and many

projects essential to the development of the fishing industry have to be left undone for want of the necessary financial resources to carry them out.

THE MUSSEL INDUSTRY.

Within the last two years the Department have, by experimental marketing, been able to effect a considerable improvement in the mussel industry upon the west coast; and it is anticipated that the mussel trade may be still further extended, in spite of the danger that arises from time to time from alarms in the English markets as to a connection between typhoid epidemics and the consumption of shell-fish. The Department are taking energetic steps to secure that Irish consignments which are free from any risk of pollution shall not suffer from a general condemnation of mussels as an article of food.

THE OYSTER INDUSTRY.

The public oyster beds have received careful attention, and, by effective policing and some measures of cultivation, a great improvement has been effected in the output of some of them; while the question of finding fresh markets, and of thus improving local prices, has been by no means neglected.

SALMON AND TROUT FISHERIES.

Salmon culture on a continually increasing scale is carried on under the superintendence of the Department, which have also in view the establishment of large trout hatcheries in connection with inland fisheries over which no private rights of fishery are enforced.

PIERS AND HARBOURS.

During the brief Parliamentary Recess I have endeavoured to devote some attention to the question of piers and harbours in connection with our fisheries. At the last meeting of the Council I spoke strongly upon the conditions prevailing; and I have since made several visits of inspection to different parts of the coast to see things for myself.

SERIOUS LACK OF NECESSARY FUNDS FOR FISHERIES DEVELOPMENT.

I am not going to repeat now what I said in May last, further than to reiterate my belief that a Statutory Authority practically without funds to do the work necessary in order to justify its existence is, in many respects, a sort of mockery. I visited the Island of Rathlin on one of the wildest days of the year, and saw

enough to convince me how hopeless it is for the inhabitants of that island to carry on any industry without a harbour and suitable landing places. This is a typical case. A comparatively small sum would do all that is required. The County Council of Antrim, representatives of which accompanied me to the island, armed with authority under the Grand Jury Act of last Session, are anxious to co-operate. And yet for what may be considered a trifling sum the Department are in the greatest difficulty. Similarly I visited Wexford and received a deputation from the County Council. They require the use of a second dredger to clear the small harbours around the coast. These harbours are almost all silted up with sand, the facilities available being wholly inadequate for dealing with this difficulty. It is only a question of time when, in some of these cases, ingress and egress will be impossible. This surely is a work of primary necessity, and yet, when we are brought alongside the facts the financial difficulties are found to be insuperable. What can the Department do with an annual Fishery Endowment of £10,000, of which £6,000 has to be paid straight-away for the policing of the coast—a duty which in Scotland is done, I understand, on a much larger scale out of the Parliamentary Votes? I submit this question to the Council to-day as one of the gravest of our administrative difficulties. I know full well that the present time is inopportune for making fresh demands upon the Treasury. It is just possible, when the figures are made up for the year, that what is known as the Irish Imperial Contribution, *i.e.*, the difference between what Ireland receives and what Ireland pays in revenue, will have disappeared. Old Age Pensions, New Universities, the Congested Districts, and National School Teachers have swallowed up a very large sum, and it may be held to be impossible to provide at present the few thousand pounds necessary to make the condition of the fishing population even tolerable. This question, like the question of afforestation, is not one of mushroom growth. It has long been clamant for attention, and, concerning as it does a vital element in our national economy, I feel justified, as the Ministerial Head of the Department charged with its development, in giving voice to my view of the seriousness of the situation.

GENERAL PROGRESS OF THE DEPARTMENT'S WORK.

I have occupied your attention, not I hope at undue length, with these references to the work now going forward. You will doubtless have observed that I have dealt entirely with actual work either in operation or in contemplation. There is no rhetoric

in this address—no element of controversy touched upon; in fact controversy, apart from inevitable difficulties in administration, has no existence in connection with the work of the Department. It is an extremely pleasant thing at a time like the present, when there is so much unrest, when men everywhere are uncertain about many things, that one in my position, in actual contact with the great forces that to a large extent make up the life of the country, is able to stand here and declare that the great work of the Department goes forward—I will not say without a hitch, but goes steadily forward in all its branches, with ever-increasing benefit to every section of our agricultural and industrial population. There is a common saying that imitation is the sincerest form of flattery, and when we find that large sections of the English and of the Scottish people are insisting that the organisation and development of the agricultural industry of England and Scotland shall be carried out on the same lines as are followed by the Department in Ireland, and are constantly holding up our work as an example of what ought to be done in their case, there are just grounds for satisfaction alike on the part of those who founded the Department and of those who are engaged in carrying forward its operations throughout the country.

MUCH EDUCATIONAL WORK YET TO BE DONE.

But although this is true, it ought not to blind us to the fact that there is much yet to be achieved. The machinery has to a large extent only just been put into motion, and it takes years of painful educational effort to produce beneficial and enduring results on the character and industry of a nation. We have to overcome the effects of an evil past. We were and are far behind in the race, and must needs run steadily and well if we are to substitute for a long dark yesterday a really hopeful, progressive, and bright to-morrow. In all that relates to the small agricultural industries things may be said to be in a healthy state, but in all directions the room for development and extension is almost immeasurable. As regards the improvement of cattle and stock breeding, much has been done, much has had to be left undone. In technical instruction every shilling of the Parliamentary endowment is allocated, and for essential work in the rural districts the grant has had to be supplemented from the agricultural side.

REPRODUCTIVE EXPENDITURE.

I stated in Parliament recently, in a debate on the cost of Irish

government, that it was not less, but more money which the Department required; and I pointed out—what I desire to re-iterate here—that, unlike the expenditure in some other directions, money spent on the Department was almost entirely reproductive. That view was wholly accepted by my colleagues in the Irish representation. How to find money for the development of Irish agriculture, and Irish resources generally, is the great question which troubles my own mind and that of everyone connected with the Department's work. I can only place my trust in the strong public feeling which everywhere exists as to the utility of the work, and as to the necessity for its extension, to secure that financial support without which we must find all our efforts impeded and hindered.

TOBACCO-GROWING IN IRELAND.

Experiments in the growing of tobacco have been carried out under the auspices of the Department since the year 1900. In the earlier years the experiments were for the most part conducted on small plots widely distributed, and the curing of the leaf was effected under great disadvantages. The results showed, however, that tobacco could be grown and cured successfully in Ireland, and that a leaf suitable for blending in smoking mixtures could be produced.

Since the year 1904, inclusive, the experiments have been conducted on a commercial scale. This involved the planting of a considerable area, and provision at each experimental centre of equipment for curing and finishing the leaf as well. In 1904, tobacco was grown on twenty acres at one centre. The number of centres and the area under tobacco were subsequently increased, so that during the year 1908 experiments were conducted at eleven centres in the following seven counties—Louth, Meath, King's, Kilkenny, Wexford, Tipperary, and Limerick, the total area cropped being almost 100 statute acres. The object of these experiments is to determine the possibilities of tobacco as a paying crop for the Irish farmer. This is a very complex problem, owing to the fact that tobacco growing is a highly specialised industry, as may be gathered from the following remarks upon the classification of tobacco. There are several hundred varieties of the tobacco plant grown throughout the world, but their classification would be difficult and valueless owing to the endless modifications produced by the differences of soil and climate. The same variety grown on the same field for two different seasons may produce leaf that is adapted for entirely different purposes. The first season may be such that the leaf will be dry and thin and adapted only for cigarettes, while the second season may grow a leaf that will be ideal for plug wrappers. The same plant will also produce several grades of leaf that will belong to more than one class, the lower leaves may be adapted for pipe smoking, the next for cigarettes, and the tips for plug fillers. For this reason a classification quite distinct from variety classification is adopted in commercial circles. The trade recognises classes, types and grades. By a class is meant the purpose for which the tobacco is to be used, for cigars, for chewing, for cigarettes, or for pipe smoking. A type is based on the combination of certain qualities and properties in the leaf, as colour, strength, elasticity, flavour, body, etc., or on certain characteristics produced by methods of curing, as air

cured, fire cured, or flue cured. One type may often be placed in more than one class, as is the case with the American yellow tobaccos, which fall into both the smoking and chewing classes. A class embraces many types. A grade is a sub-division of a type based upon different degrees of quality, as determined by colour, size, texture, aroma, &c. Sumatra tobacco from the same farm may be divided into seventy-two grades, while common tobacco may be divided into only two or three grades.

The tobacco plant thrives in nearly every portion of the world, and its choicest products are sent to the British markets from many countries and climates. Throughout the tobacco growing world each small district is usually identified with the production of a certain type of tobacco. This arises from the fact that a few kindred varieties, most suitable to the soil and climate, are produced by methods best adapted to the local conditions and market demand. By such means local markets are established, and greater skill is developed in the production of a tobacco of the highest quality and the lowest cost, that will hold its own in competition with similar types of tobacco. Thus is the course laid out which the experiments must follow in the introduction of tobacco culture into new regions. By a careful study of soil, climate, labour, and market conditions, the types most suitable for trial may be selected. The varieties that are known to produce these types in greatest perfection should be thoroughly tested, and the best ones retained as standard croppers. When the most suitable type and variety have been determined, the requirements must be thoroughly studied, and a system of production evolved to suit the peculiar conditions. The final step is the development of a market. The investigations as outlined above fall naturally under the following heads:—

Soils.	Suckering.
Climate.	Ripening.
Varieties.	Harvesting.
Fields.	Scaffolding.
Preparation of Land.	Seed Saving.
Manures.	Insects and Diseases.
Seed Beds.	Curing.
Planting.	Barns.
Cultivation.	Preparation for Market.
Topping.	Marketing.
Priming.	Cost of Production.

A series of leaflets is now being issued by the Department detailing the best methods for all operations connected with tobacco growing



Fig. 1.—New Curing Barn, with walls unfinished, showing Method of Hanging Tobacco.

TOBACCO-GROWING IN IRELAND.



Fig. 2.—Tobacco field on 2nd July, 5 weeks after planting. Sheltered by Horse Beans grown in "Lazy Beds."

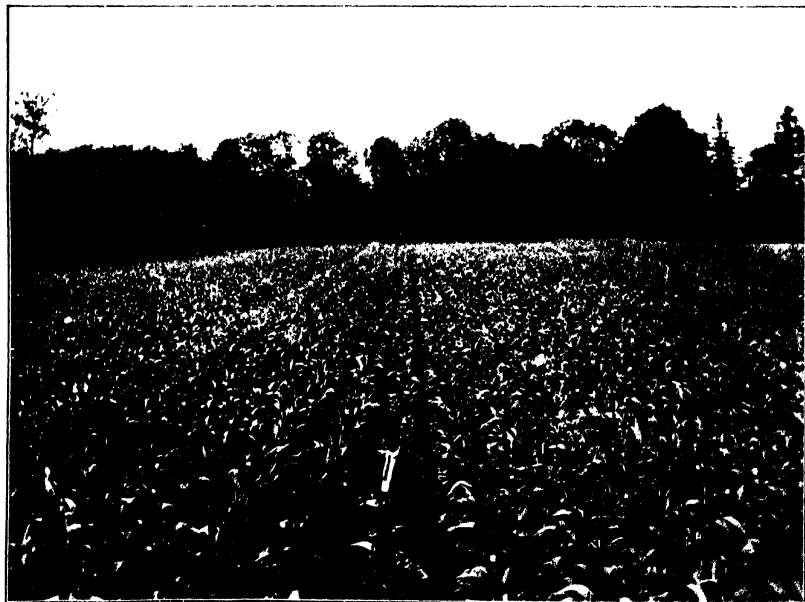


Fig. 3.—Field of Kentucky Burley Tobacco nearly ready for topping.

in Ireland. There are several books treating generally of tobacco culture, but as manuals they are misleading, for though the principles underlying tobacco culture are the same the world over the methods adopted must differ radically. A full discussion of these principles is beyond the scope of leaflets or of the present article, but all growers of tobacco would profit by studying a treatise on the subject. Readers of such books, or those persons with experience of tobacco growing in foreign countries may find the following account useful in applying such information in Ireland. It is designed to note the progress of the experiments in discerning and overcoming differences peculiar to the Irish climate and conditions.

Many prevailing types of soil have been tested, including various clays, clay loam, sand loam, moor and bog.

Soils. When in good condition as regards drainage, texture and fertility, all have produced an abundant growth with a uniformity of results that is remarkable. There are perceptible differences in the quality of the tobacco which the various soils produce, and in time they would probably give rise to different types, but the strong prevailing influence of the Irish climate greatly counteracts this natural tendency. The distinctions between different soils are thereby rendered very fine, but they should nevertheless be closely regarded. The lighter soils produce a better quality of leaf, while moorland seems adapted for the production of a cheap coarse tobacco.

The northern insular climate of Ireland affects the tobacco plant in many ways. Its cool moist atmosphere is very

Climate. favourable for the growth of plants, and makes them to a large degree independent of soil moisture, which ordinarily is a prominent factor in determining the type of tobacco a soil is adapted to produce. This influence and the long ripening season enable varieties native to very different soils and climates to flourish here vigorously and display their characteristics in a marked degree. Yet the climate sets its stamp upon them all. The influence of cool moist climates upon the growth of tobacco is well known. The leaf shows a tendency to grow thin and large, and has less gum, resin and aroma. In this country the prolonged ripening season makes it possible for the leaf to overcome the tendency to grow thin, by storing up considerable quantities of cell substance when allowed to ripen fully. The rains and scant evaporation, however, prevent the accumulation of much free gum upon the surface of the leaf. Though the growing

season is long the plant matures slowly in this climate, leaving a narrow margin of growing weather for certain varieties. Yet, generally speaking, there is little hazard from frost if proper care be taken. In fact the plant becomes more hardy than in climates subject to great daily extremes of temperature. In most countries tobacco grown near the sea is poor in burning quality, but this fact has not made itself evident in Ireland. In County Wexford tobacco is grown within three miles of the sea, in three directions, but its burning qualities are quite as good as tobacco grown in midland counties.

Nearly one hundred varieties have been tested in the experiments here, including hybrids and Irish saved seed.

Varieties. All classes of tobacco have been produced, embracing the principal types of American and other leading tobaccos suitable to the British market. The result of these trials are not yet decisive as to the best class or type of tobacco for growing in Ireland. It has been possible, however, to select somewhat definitely certain typical varieties most suitable for the production of each class. All varieties of tobacco flourish here so freely that it is difficult to eliminate either individual varieties or types. It is possible to grow in the same field, by different methods of culture, varieties producing Sumatra cigar wrapper, Western Kentucky plug fillers, and Burley roll wrappers, each possessing its peculiar qualities in almost the same degree. The nature of the market demand renders a selection of the most suitable type still more difficult. A heavy dark pipe-smoking tobacco is most likely to meet with ready sale in British markets, but it cannot be grown in Ireland at a sufficient profit. Cigar tobacco, for which Ireland seems best adapted, is in least demand in these markets. These circumstances make it necessary to continue the experiments with several distinct types and classes in order to find one which fulfils all requirements.

Fields for tobacco should be selected with regard to shelter and rotation. In northern climates a southern aspect

Fields. is an advantage, but in this country the strong prevailing winds require first consideration. Hence the first regard is for shelter. Cold racking winds reduce the yield, and even alter the characteristics of the tobacco plants, while wind storms may almost destroy a crop in a few hours. The protection afforded by hills and elevations is usually from one direction, and may be altogether deceptive. Level wooded areas are much safer. The field selected should be small, preferably level, and surrounded by very

high, thick hedges. In addition to the shelter so provided, shelter belts of tall growing herbaceous plants such as American hemp, peas, beans, and Jerusalem artichokes, or even artificial erections, may be necessary. The Sumatra variety grown for cigar wrappers requires double the protection of coarser kinds.

Rotation affects the soil as regards its texture, fertility, and freedom from certain pests dangerous to the tobacco crop. Old pasture lea provides a condition of soil that is very desirable as regards texture and fertility, but it is liable to be infested with slugs, wire-worms, and leather jacket larvæ, which are inveterate enemies of the young tobacco plant. It should, therefore, be avoided until found free from these pests. Corn stubble is to be preferred as combining the three advantages in greatest degree, but other rotations are permissible. It has been found that tobacco may be substituted for the ordinary green crop in many rotations, or with many types it may succeed itself for an indefinite term of years provided the soil is not allowed to deteriorate in any particular.

In order to produce the rapid growth and maturity so necessary for the tobacco plant, the soil must be in the very finest condition. For this result a thorough preparation is necessary before planting. Deep autumn ploughing after well rotted dung has been distributed broadcast is strongly advised. Thorough spring culture and cleaning is required before drilling and distributing the artificial manure, which should be done just before planting

Manures affect both the quality and yield of tobacco. The production of quantity is comparatively simple, but the control of quality by means of manuring is more difficult with tobacco than with most crops. Colour, texture, size, aroma, flavour, combustibility and the ripening process may all be affected by the manures used. No best formula can be given for manuring tobacco, for the reason that the elements and the amounts required will differ with each change of soil. Many facts are already known regarding the action of the different manurial elements upon the tobacco plant, but plot experiments have been conducted at the various centres in order to determine the following points in relation to Irish soils :—

1. The effect of artificial manure as a growth starter.
2. The relative values of different formulæ.
3. The requirements of different soils.

4. The relative values of artificial and farmyard manures.

5. The relation of yield to kind and amount of manure.

The results will be published later in detail, but briefly :—

1. Growth is much more rapid at the start when dung is supplemented by artificials than when dung is used alone. The artificial should be a complete manure with all of the elements in the most available form. It should be placed in the drill very close to the surface at time of planting.

2. Upland soils give the largest returns when formulæ providing a large per cent. of phosphate are used, while moorland responds best to potash. Nitrogen has a tendency to make the leaf heavy and coarse. Phosphate greatly hastens the ripening process, and makes the leaf coarse. Potash makes a smooth leaf, and increases the burning qualities, but rather prolongs the growth.

3. The results upon upland soils, varying from a clay to a light loam, were very similar. It is rather premature to draw conclusions upon this point, but the uniform results may be due to the general production of corn or grass upon all land, which depletes the phosphates, or to the general depletion of soil fertility through long use. General depletion would make a crop requiring a large supply of available plant food greatly dependent upon the manure, and, though tobacco is not a phosphate feeder, it is believed that phosphate stimulates the plant to the utilisation of the other manurial elements.

4. Many vegetable manures in common use in other countries are not available here owing to their high price. The common manure salts are the commercial fertilisers of this country, and of these the following are recommended for tobacco :—sulphate of ammonia, high grade sulphate of potash, and 35 per cent. superphosphate. These may be combined in suitable formulæ for different soils, but the practice of using artificial manure alone is not advised. It is expensive, and adds nothing to the physical condition of the soil. It is useful for these reasons :—It is ready to hand, easy to apply, and quickly available if in the forms suggested. It produces a rapid growth, early ripening, and heavy yield. Farmyard manure is distinctly cheaper for this country, and when well rotted gives good results as to quality and yield. It produces a thin smooth leaf of good colour. When used alone the growth is backward in spring and too prolonged in autumn. For the sake of early maturity, and where thick leaves are required, it should be supplemented with artificial manure.

A system of manuring adapted to all tobaccos, especially the finer

TOBACCO-GROWING IN IRELAND.

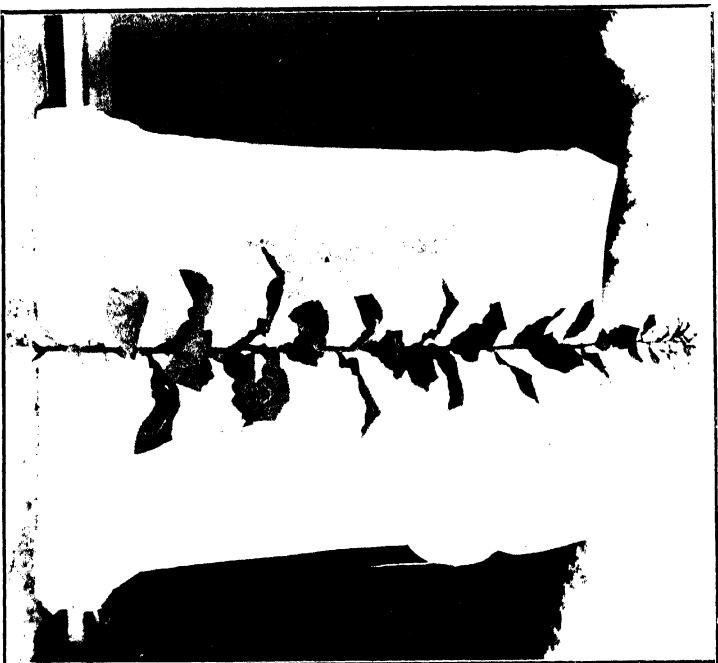


Fig. 4.—Turkish Plant (variety Mahalla),
A cigarette tobacco.



Fig. 5.—Connecticut Broadleaf (Seed Plant)
A cigar tobacco.

TOBACCO-GROWING IN IRELAND.



Fig. 6.—Virginia Blue Pryor (before topping).
A heavy pipe-smoking tobacco.



Fig. 7.—Virginia Yellow Pryor (topped plant nearly ripe).
A cigarette or pipe-smoking tobacco.

kinds, is to sow rye in the autumn and pasture it off with sheep in the spring. This adds both fibre and fertility to the land in a form most suitable to tobacco.

5. The yield is found to be proportionate to the manure applied, until a very high state of fertility is reached. Most Irish soils require an initial dressing of from twenty to forty tons of well-rotted dung, and from four to twelve cwt. of high grade artificial. The kind and amount of manure should vary for different tobaccos, especially for Turkish and bright Virginia types, which require very limited manuring in this climate.

The tobacco seed is very small—about 300,000 to the ounce—and the reserve material for the nourishment of the young plant is soon exhausted. As a result, the young plant is forced to prepare its own food much sooner than is the case with most plants.

All kinds of seed beds have been tried, including open beds, cold frames, hotbeds, and greenhouses. All matters pertaining to their construction and management have been investigated. The results are distinctly in favour of glass covered hotbeds of simple portable construction, heated by horse manure. The details of their construction and management are intricate and they are comparatively expensive, but the results are most reliable. Each (6 by 4 feet) sash may be relied upon to produce from 1,200 to 1,500 plants fit for the field, within a period of six to eight weeks. The best time to sow the seed is from the 15th of March to the 15th of April, according to the variety and condition of beds.

With regard to planting, the following points have been investigated :—

Planting.	The time of planting ;
	The size of transplants ;
	The distance between plants ;
	Drill versus level culture.

The practice in these matters should vary somewhat with the variety grown. In this climate properly hardened plants will stand five degrees of frost, but it is scarcely safe to begin planting before the 15th of May. Planting should be completed as soon after the 1st of June as possible in order to secure favourable conditions of soil and weather for this operation and to allow time for maturity. Sumatra benefits more by late planting than other varieties. Exceedingly small plants

may be transplanted here and survive owing to the moist cool atmosphere, but strong plants of four and five leaves are better. Large plants may be "set" deeper and more securely, they will start growth quicker, mature earlier, and withstand better the attacks of slugs and wireworms.

The distance between plants has an important bearing upon the quality and characteristics of the cured tobacco, and should vary with the type of tobacco grown, with the soil, and with the climate. A cigar tobacco with small thin leaves is planted much closer than ordinary smoking tobacco, requiring large leaves of great thickness or "body." Soils poor in texture and fertility will not bear as close planting as the same soil in good condition. Moist climates encourage an abundant growth. Owing to the prevalence of strong winds and the tendency of the tobacco leaf to become narrow in this climate, close planting and low topping should be practised in this country. Custom in Ireland favours drill cultivation, and for this reason it has been generally practised with tobacco. It provides an easy means of distributing the artificial manure, and prevents the large footed draught horses in general use from treading upon the plants, but, on the other hand, it increases the expenses of cultivation and the liability of injury by drought and wind and also cramps the root system of the plants. Level culture is perhaps the best where there is no danger of excessive moisture in the soil.

Experiments have been conducted to determine the proper time, frequency, and depth of cultivation, and the best methods and implements for level and drill culture. Conservation of moisture being of little importance in this climate, cultivation should be for the purpose of aerating the soil and preventing weed growth. It has been found that weed growth is the determining factor as to the number of cultivations. The ideal time to cultivate is a hot sunny day when weeds are in the seedling stage.

The tobacco plant has a tendency to the production of seed, and for the reason that the seed is formed at the expense of the leaf, the blossom or terminal bud must be removed, and with the blossom must be removed all the leaves in excess of those that the plant can properly develop and ripen. The time at which this operation of topping should be performed depends on the use to which the cured tobacco is to be put; as well as to conditions of soil and climate, and the individual

characteristics of the plant. For these reasons experiments have been necessary to determine the proper height of topping for the different varieties and conditions of soil, to determine the proper stage of maturity for topping, and to test the advisability of topping cigar varieties.

These experiments indicate that in general the climatic conditions favour low topping for all tobaccos requiring much "body" or thickness of leaf. The cool weather causes the seed head to push out prematurely, but if left alone the plant will become full grown before it is necessary to remove the top. Under normal conditions, this should not be done until the first flower has shown. The Sumatra variety for cigar wrappers should not be topped until just previous to the last priming. Most Turkish varieties are not topped at all. Pryor and Burley for cigarette cutters should be topped very high and when in full bloom.

In this climate the bottom leaves of the plant suffer comparatively slight injury or deterioration, which renders it quite inadvisable to pull off and discard these leaves—a practice which is known as priming.

Priming.

As soon as the plant is topped, or even before, small shoots or suckers start out from the axils of all the

Suckering. leaves. If these suckers be allowed to grow, they will greatly lessen the amount of tobacco produced, and also injure the quality. The cool weather of this country greatly increases the tendency to sucker, especially in the earlier stages of growth. The suckers may require removal soon after the plants start to grow in the field; and at the time of topping another growth may be ready for removal. This operation must then be repeated at frequent intervals until harvest.

Ripening is hastened by the topping and suckering operation. The remaining leaves are filled with an abnormal

Ripening.

accumulation of organic compounds that would have been used for the development of seed and other leaves had the tobacco plant been allowed to mature normally. The plant, at this stage, largely increases its percentage of acids, nicotine, and protein compounds. There are many signs of ripeness which differ somewhat with the various types of tobacco, as well as with soil and climate. Ripeness is indicated in the leaf by curling of the edges and drooping, change in colour and texture, loss of smoothness and gloss, increase of body and brittleness. In Ireland

these signs are not quite so apparent as in warm, dry climates. The ripening period here is unusually long, so that with any but very late tobaccos there is much scope for discrimination as to the time of cutting. Heavy dark tobacco will often stand for a month after it displays practically all the signs of ripeness, and will continue to improve in general quality.

When the proper stage of ripeness has been reached the time has arrived for the harvest. All portions of the

Harvesting.

tobacco plant do not ripen at the same time, and because of this fact two different systems of harvesting have been developed. In the one system the whole plant is harvested on the stalk, when the middle leaves of the plant are mature, while in the other system each leaf is primed off as it becomes ripe. The first system is accomplished with the minimum of labour, although it will not produce so large a percentage of properly ripened tobacco as the second system, for when the middle leaves are at the proper stage of ripeness the lower leaves are over ripe, and the top leaves still green. The two systems are adapted to different types of tobacco, and involve very different methods of procedure. Methods most suitable to each type of tobacco have been adapted to Irish conditions. Harvesting by the single leaf system may begin here as early as the 20th of July, and generally harvesting may continue until nearly the 15th of October. The detailed description of this and subsequent operations must be left for a leaflet.

Placing the cut plants to wilt upon scaffolds in the field is found to be a very valuable practice here. Scaffolding,

Scaffolding.

for a few days only, permits of a great saving in barn room, and if continued for several weeks, which is often possible, the tobacco may be cured almost up to the midrib before it is necessary to remove it to the barn. It is desirable to provide some form of shelter for the scaffolds, and decidedly the best, though expensive, is a tarpaulin arranged to keep off rain. Beneath trees of dense foliage or along an overhanging hedge is a good place to erect scaffolds.

In the production of any tobacco, the type must be kept perfectly uniform, and deterioration prevented by a

Seed Saving.

most careful selection of seed. There has been much recent investigation of this subject, and the results have been closely followed in these experiments. While the tendencies of the climate are being studied it is considered

TOBACCO-GROWING IN IRELAND.



Fig. 8.—Pryor Tobacco planted close and sheltered by a narrow belt of Hemp.



Fig. 9.—Burley Tobacco sheltered by high hedges and belts of Hemp.

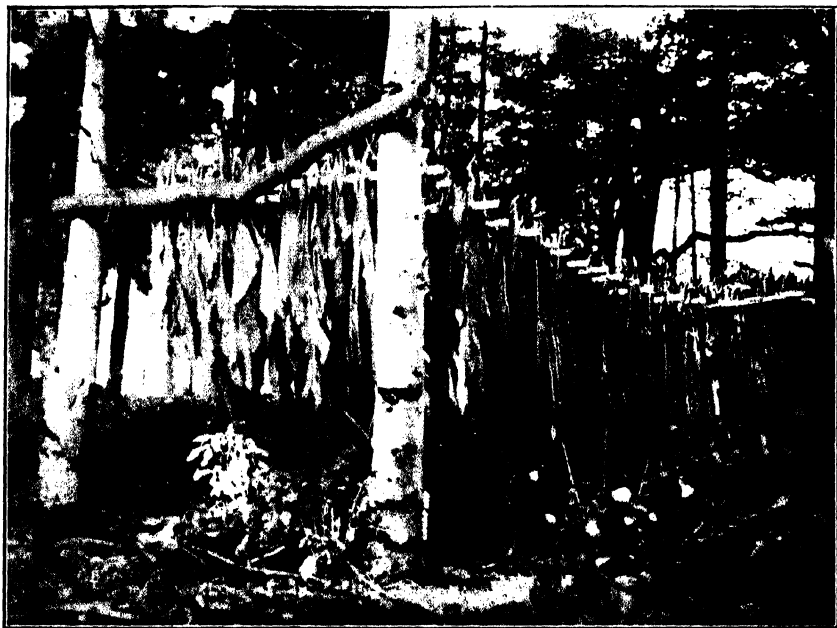


Fig. 10.—A Sheltered Scaffold. Harvested Tobacco “Wilting” and “Yellowing” on a scaffold constructed of barbed wire under trees.

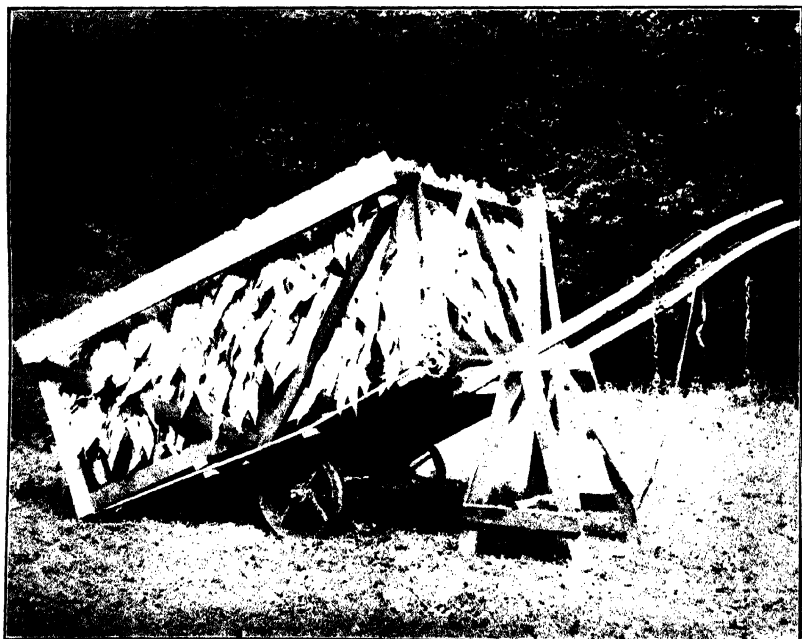


Fig. 11.—Hay Lorry adapted for transporting harvested plants to Curing Barn.

advisable to use imported seed in the commercial experiments, but this practice is not likely to continue. Many types show no tendencies to deterioration under Irish conditions that have not been overcome through careful selection of seed plants, and the important advantage has thus been gained of securing seed that is acclimatised and perfectly true to the type. Promising results have been secured by hybridising certain varieties having peculiar qualities adapted to this climate.

There are several pests and diseases of tobacco to contend with here, but Ireland enjoys comparative immunity

Insects and Diseases. in these respects. Slugs are a serious menace to tobacco in both planted and field. They are troublesome only when the plants are small, but at that stage entire plantbeds and freshly planted fields may be eaten bare. The young plants may be sprinkled with lime as a deterrent, but prevention is a much better course to adopt. Clean soil and tight frames for the seed beds and clean fields and headlands will rid the grower of these pests. Wireworms may be even more destructive and difficult to combat. They destroy the young transplant by burrowing up through the stem. The remedies are strong plants, rapid growth by abundant manuring, coarse and caustic manures in the drill as a repellent, and rape meal as a counter attraction. Leather jacket grubs do not usually occur in such numbers as slugs and wireworms, but they are very destructive. They sever the stem of the young transplant at the surface of the ground, and may usually be found in the earth just beside a freshly cut plant. When replanting they can be readily dug out and killed.

These three are the only serious pests in this country, and they are practically confined to lands recently in old grass. For this reason such lands should be avoided until found free from these dangers.

Curing is not merely drying but is a chemical process the exact changes and reactions of which are not fully understood. The quality of a tobacco is made in its growth, curing only fixes or further develops it. A badly grown tobacco cannot be made into a high-class product by any process of curing, although by skill in handling it may have latent or slightly developed good qualities brought out and emphasised. A very fine tobacco may be absolutely ruined by lack of skill in the curing process. The process may be said to commence the moment the plant is cut, and to continue until no further change takes place in the leaf.

Several different methods of curing are in vogue. They are based on differences in the nature of the tobacco grown as well as on the fuel supply, labour and climatic conditions and the demands of the market. All recognised systems of curing have been tried, and a new system involving forced ventilation has been tested. Sun curing of Turkish is difficult owing to frequent showers and a deficiency of sunshine, but the use of covered scaffolds and glass barns makes it possible. Air curing, where supplemented in unfavourable weather by some simple means of heating, is a success with many types of tobacco. Heat may be supplied cheaply by means of stoves, coke braziers, or, in the case of certain tobaccos, by means of peat fires handled in a special manner.

British markets take large quantities of fire-cured tobacco, and curing with open wood fires would be a practical method were large supplies of hardwood available and cheap. Flue curing is expensive here on account of the large consumption of fuel. Steam heated barns are ideal, but very expensive.

Forced ventilation by means of fans and air ducts has not shown an advantage commensurate with the cost.

The curing process is controlled by regulating the humidity and temperature in the curing barn, hence great modification is required in the usual methods of curing to adapt them to the Irish climate. In the study of this question two new methods of curing have been evolved that are especially suitable to this climate.

The varieties from which American yellow tobaccos are made, grow too rank in moist climates or upon any but very light soils, and it is impossible by the customary American methods to cure such tobacco with the usual bright colour; but by slowly "sapping" the moisture at low temperatures it is possible in Ireland to make a bright cutting tobacco from these varieties when they are grown properly. Practically a new type of tobacco is now being produced here from Burley varieties by a method of curing very similar to that used in America for making bright cigarette tobacco. This is one of the most promising developments of Irish tobacco growing, as all of the methods concerned in the production of this new tobacco seem well adapted to Irish conditions.

Curing barns may be designed to afford mere protection from inclement weather or for the more difficult

Curing Barns. purpose of regulating the temperature and humidity to an exact degree. Different types of curing barns should be used for the various methods of curing. Their

form and construction usually vary with the climate, the ideals of the grower, and the suitable materials that are most easily and cheaply obtained in the locality. On these principles many types of barns and methods of construction have been tried in these experiments. At the beginning it was thought advisable to reproduce the same general conditions for curing as existed in warmer countries, and for this purpose costly elaborate steam heated barns were constructed. In these barns the temperature and humidity are under the most exact control, and in principle they are ideal for curing tobacco. Their cost, however, is prohibitive, except for making the new yellow tobacco previously mentioned. Moreover, it has since been determined that it is neither necessary nor desirable to use foreign formulas for curing tobacco in this country. In fact the experiments indicate that air curing, supplemented by slight heat at critical periods, is the best method of curing most classes of tobacco. For this method the gentle influence of the moist atmosphere makes a very open structure most desirable, but all ventilation should be controlled in order to make a very slight heat effective when it is needed. If in addition the structure is on high ground with one side facing the prevailing breezes no other conditions are absolutely necessary for an air curing barn. Galvanised iron hay sheds fitted with canvas curtains, lofts and deserted stone structures of all kinds have been successfully used as air curing barns in these experiments. The cost of altering existing structures by making and controlling ventilation, providing simple means of heating and erecting supports or racking on which to hang tobacco, will vary considerably. A typical case may cost £15 to provide accommodation for one acre. A hay shed may be adapted at the rate of £10 to £12 per acre.

New tobacco barns should be constructed of wood. A new wooden structure to accommodate the produce of two acres, suitable for both tobacco curing and cattle feeding may be built for £80. A new steam heated barn to accommodate a ten-acre crop will cost not less than £1,000.

It may be added that in the case of several types of tobacco only the growers with steam appliances are able to finish the preparation of their tobacco for market. Growers with other types of barns would be dependent upon middlemen, as is the custom in tobacco growing countries. There is no reason, however, why an association of growers could not be incorporated for the purpose of conducting the business of preparing cured leaf for market.

The preparation of the tobacco for the market involves the operations of grading, bulking, fermenting or sweating,

Preparation for Market. ordering, packing, and ageing. In other countries these operations are not usually

performed, except in a temporary way, by any but the largest growers. The tobacco, graded roughly or not at all, is sold either loose or in rough packages to middlemen called rehandlers. It is their business to grade, prepare and pack the tobacco for special markets with which they are in touch. These facilities cannot exist in the experimental stage of the industry; hence the Irish growers have had to do this work themselves, under conditions quite different and more difficult than those existing in most tobacco growing countries. Many experiments have been necessary to find methods best adapted to this country.

It is quite necessary to keep the cured tobacco in a safe condition as regards moisture. The moist open winter of Ireland renders the cured tobacco very liable to mould, and frequent drying out is required to avoid this.

Each type of tobacco must be graded quite differently, and the amount of judgment required in each case is considerable. As already mentioned, Sumatra tobacco from the one farm may be divided into seventy-two grades. Even with common tobaccos it has been found difficult for beginners to use the simpler methods in vogue in the native country of each type.

Bulking is the accepted method of fermenting cigar tobacco, and it has also been tried here with success for sweating other tobaccos. The operation consists in putting the tobacco down with a definite percentage of moisture in large orderly piles for the purpose of developing the aroma and flavour of the tobacco. The operation involves considerable skill and risk. Sweating differs from fermentation only in degree. Both processes are controlled by regulating the temperature and moisture of the bulk.

All tobaccos should undergo some degree of fermentation before they are fit for use. It may be violent and rapid for cigar, moderate for heavy smoking tobacco, and mild and prolonged for cigarette.

It has been found that Irish tobacco possesses the necessary qualities to undergo a satisfactory fermentation. In warm countries tobacco will sweat naturally in the package, but here it must be induced by artificial heat. For this reason bulk sweating was tried, but for properly cured tobacco it has been found that sweating in the package by artificial heat is more economical for pipe and cigarette tobaccos.

TOBACCO GROWING IN IRELAND.

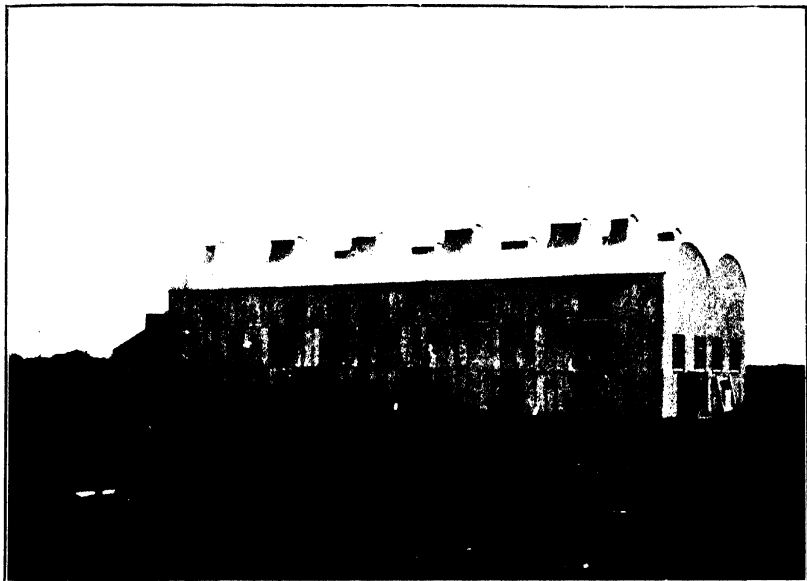


Fig. 12.—An expensive Curing Barn heated by steam.



Fig. 13.—Another expensive Curing Barn heated by steam.

TOBACCO-GROWING IN IRELAND.



Fig. 14. A cheap Air Curing Barn. Useful for tobacco curing and cattle feeding purposes.

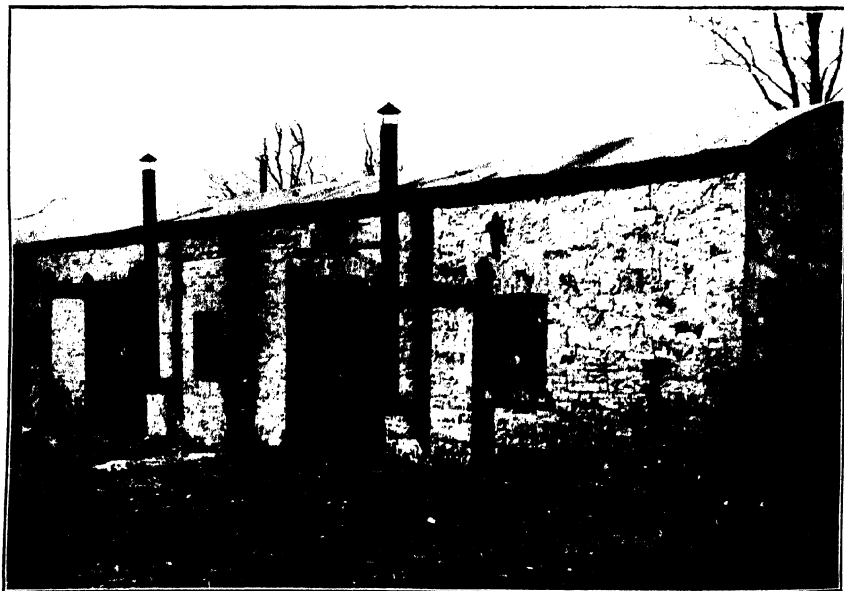


Fig. 15.—A typical farm building converted into a Curing Barn, without impairing its usefulness for its former purpose.

Tobacco, as it comes from the curing barn, is not in condition for packing permanently in hogsheads. The body of the leaf may be so dry that it will easily crumble, and at the same time the stem, while apparently dry, will contain enough moisture to furnish food for the growth of mould. Moreover, tobacco intended for British markets is packed as dry as possible because of the high duty imposed.

There are three methods of bringing tobacco into proper order for packing in hogsheads. Air ordering is not possible in this climate, and is going out of practice in America. Machine ordering is the method generally used for handling very large quantities of tobacco of several hundred thousand pounds or more. A similar method involving the use of steam without elaborate machinery is used for small quantities of tobacco. This method on a very small scale has been adapted to the needs of Irish growers. Cigar and Turkish tobaccos are not adapted to the method of packing in hogsheads. They are packed in small bales with slight pressure and contain more moisture. It is not difficult, therefore, to get these tobaccos in proper order for packing.

Methods of packing tobacco may differ with the class or type of tobacco, with the district where it is grown, or the market where it is consumed. The package may be made of wood or woven materials, whichever is cheapest and most suitable in each case. A certain style of package becomes identified with each type of tobacco, hence it makes competition easier for countries undertaking the production of an established type to adopt the regulation package. Tobacco should be packed for market in a systematic manner, some methods being much more difficult than others. For instance, the grading and packing of Turkish tobacco is a special trade requiring long apprenticeship.

It has been possible in these experiments to pack the several types of tobacco that have been produced in commercial quantities according to market requirements.

After tobacco has been cured it must go through a process of ageing before it is fit for consumption. Ageing softens and mellows a tobacco, taking away its rawness and bitterness as well as disagreeable odours, and improving the aroma and the burning qualities of the leaf. No tobacco, and particularly no tobacco from a district that is trying to obtain recognition, should be marketed before it has developed the qualities that come with age. In the cool climate of Ireland tobacco ages very slowly, and it is necessary, therefore, to ferment or sweat it very thoroughly to make up for the want of ageing. If stored in a warm place tobacco will age more rapidly, but care must be taken to avoid drying it out so thoroughly as to prevent any further change in the leaf.

The reputation of Irish-grown tobacco has suffered greatly from marketing and manufacturing it prematurely.

It is very difficult to develop a market for a new tobacco for the reason that tobacco manufacturers are very

Marketing.

conservative, and look askance at an unknown product. If it is a tobacco of merit, however,

it may eventually gain recognition, and gradually develop a reputation. In the meantime it may find a sale owing to a general scarcity of tobacco in the markets, or by being offered at a very low price. It is far more difficult to establish a reputation for quality than for cheapness, but the production of a cheap inferior tobacco seldom pays. The sale of Irish-grown tobacco has been helped by the general scarcity of tobacco during recent years. All tobacco leaf sold and consumed in the United Kingdom must pass through a bonded warehouse, where duty must be paid upon the net weight of tobacco before it is withdrawn for manufacture. The usual method of marketing is through a tobacco broker, though it is sometimes possible to sell direct to the manufacturer. The charges for marketing may be included under the following heads:—Freight, cartage, warehouse charges, including allowance for shrinkage, rent, fire insurance, brokerage, and commissions. The total charge has averaged from $\frac{1}{2}d.$ to $\frac{3}{4}d.$ per pound for marketing the Irish crops. The crops of 1904 and 1905 were marketed through a Dublin tobacco broker in a manner usual with imported tobacco. In 1906 and 1907 most of the growers sold direct to a Belfast manufacturer through their Association. In 1907 three growers sold direct to separate manufacturers in Dublin, Cork, and London, and one grower bought several crops to supply his private factory. As it is not possible to finish the tobacco for market before the Spring or Summer of the year following its growth, none of the crop of 1908 has yet been sold.

The prices obtained in 1904 and 1905 were influenced somewhat by the novelty of the article. The quantity of the

Prices.

tobacco was small, and most of the Irish manufacturers considered it advisable to have some

of it in stock. In 1906, however, the tobacco sold by the Tobacco Growers' Association was valued by an independent broker strictly upon an American basis, that is to say—the tobacco brought prices which American tobaccos of the same kind and quality were selling at in the Liverpool market. The crop of 1907 was sold upon the same commercial basis with the exception of two portions consisting of miscellaneous lots which were sold at an average price for all kinds.

The quantity of tobacco sold, the average yield of cured tobacco per statute acre, the average price and the range of prices at which it was disposed of were, for each year from 1904 to 1907 inclusive, as follows :—

Year.	Quantity of tobacco sold.	Average yield of dry, cured tobacco per statute acre.	Average selling price per pound.	Range of prices.
	lbs.	lbs.	d.	d. d.
1904	7,984	400	5	4½ to 6
1905	27,566	810	4½	2½ to 9
1906	66,714	860	4½	2½ to 8½
1907	55,194	635	4½	3 to 9

The yield varies greatly with the type and class of tobacco grown, and with many other factors mentioned previously. There does not appear to be any real difficulty here in obtaining 1,000 pounds per statute acre, which may be considered an average crop. If it should prove profitable to grow certain types of tobacco now on trial, the average yield per acre might be considerably increased. For instance, in an exceptional case in 1907, a yield of one ton per acre was obtained.

The cost of production is high, being not less than £20 per statute acre. The cost in some cases has been treble this sum. The cost in any given case will depend mainly upon the class and type of tobacco grown, the cost of equipment, labour and land, the methods of culture, curing, and handling, and the thoroughness with which the work is carried out.

Tobacco, like most farm crops, yields little more than a fair return upon the labour and capital involved in its production, though in highly protected countries, or where labour and virgin soils are very cheap, tobacco growing may produce large net profits. The importance of tobacco as a farm crop is due to the facts that it employs a large amount of labour, that, when properly packed, it is non-perishable, and that may be cheaply transported to distant markets.

G. N. KELLER.

DEMONSTRATION PLOTS IN CONGESTED DISTRICTS.

The Department some time ago appointed four Agricultural Overseers and twenty-three Assistant Overseers for the Congested Districts, and during the past season these officers conducted an extensive series of demonstration plots embracing all the general farm crops. The Overseers decide as to the location of each plot, and the seed or manure for the demonstration is supplied to the farmers at half cost price. As far as possible, land is selected adjoining or near to public roads, so that the plots may be as educational as possible in character. The main objects are to demonstrate the benefits to be derived from the introduction of fresh seed of suitable varieties and from the application of suitable manures and the use of lime. The operations of each Assistant-Overseer are confined to a comparatively small area, and, in addition to the work directly connected with the supervision of these plots, it is part of his duty to give practical advice and assistance to farmers in his district on all matters relating to tillage, the care and management of live stock, and the purchase of seeds, manures and feeding-stuffs.

The work has proved satisfactory, and there is evidence to show that farmers have derived considerable benefit from the advice given.

The following is a brief summary of the results of the plot tests:—

POTATOES.

More attention was devoted to demonstrations connected with potato culture than to any other crop.

Over 9,000 sprouting boxes were distributed to 750 farmers.

Sprouting Experiments.

The actual yields were weighed on 186 farms and the average increase due to sprouting was 1 ton 18 cwt. per statute acre.

Ten varieties of potatoes specially selected for their suitability for cultivation in the poorer districts were

Variety Tests.

tested at 22 centres, and tests on a somewhat larger scale with three varieties, viz.,

Irish Queen, Shamrock, and Red Cup, were made at about the

same number of centres. The largest yields were obtained from Up-to-date and from a variety of the same type—Engineer. Both these kinds, and Irish Queen, gave higher average yields than Champion, which occupied fourth place on the list. Shamrock gave somewhat variable results, but as this variety resists disease particularly well it is worthy of more extended trial. Red Cup—an old variety—gave the lowest yield, but the tubers are of excellent cooking quality, and the same remark applies to those of Irish Queen. Two mid-season varieties—British Queen and Diamond—were included: the latter gave the higher yield.

The Scottish seed supplied was rather small. The average yield
Scottish and Irish from over 100 centres was slightly in favour
Seed. of the North of Ireland seed.

For these plots seed of three varieties, viz., British Queen, Up-to-date, and Champion, was distributed in 1 cwt. lots. British Queen is increasing in
General popularity for mid-season use, and the
Demonstration tubers are excellent for cooking. The
Plots. quality of Up-to-date is generally regarded as inferior to that of Champion, but under favourable conditions the yield is higher.

OATS.

The following notes represent the results obtained from the varieties of oats which were distributed, namely, Potato, Sandy, Waverley, Banner, Black Tartary, and Tawny.

Potato oat is well known everywhere, and is perhaps the most reliable variety for general cultivation in Ireland. It produces grain of good quality, and the straw is specially suitable for stock feeding.

Sandy oat will yield better crops than Potato oat when grown on poor light soils. It tillers very freely, and the straw is of good feeding quality. The grain, however, is less valuable than that of Potato oat.

Waverley requires good cultivation and land of high fertility. The grain is large, and as the plants do not tiller well more seed is required than for the kinds most commonly grown.

Banner is a variety of recent introduction, and has given excellent results in County Galway. The grain is somewhat coarse.

In early districts and on fairly good land this variety may be expected to do well, except perhaps in County Donegal.

Black Tartary, the merits of which are generally known, has produced good crops on land where other varieties would have "lodged." It is more popular in the South than in the North.

Tawny is a brown oat in little demand except in County Donegal.

BARLEY.

Small quantities of Archer and Goldthorpe barley were distributed in Counties Donegal, Mayo, and Kerry, from which very satisfactory returns have been obtained.

WHEAT.

A few wheat plots were established, but on account of late sowing the results were not encouraging. The varieties grown were Stand-up White and Red Chaffed White.

RYE.

Unfortunately the rye crops did badly. The quality of the seed, however, was not satisfactory, but the tests will be repeated, it is hoped with better results.

MANGELS AND TURNIPS.

Seed of Long Red and Yellow Globe mangels, Best of All Swede, and Aberdeen Green Top turnip were distributed in 1 lb. parcels. Generally the mangels have been satisfactory, with better results from the Yellow Globe than the Long Red. The Best of All Swede has given good results. The Aberdeen turnips have been only fairly successful.

GRASS SEEDS.

Mixtures of grass and clover seeds for temporary and permanent meadows and for Timothy plots were tried both in 1907 and 1908. Some good crops of hay were obtained from the seeds sown in 1907, and those sown in 1908 promise very well. In certain districts, however, the seed bed is not made sufficiently firm, and in consequence the clovers have not done well. The Timothy plots have succeeded where the conditions have been favourable.

LIME.

Efforts have been made to encourage the application of lime, but in many districts there is difficulty in obtaining lime within convenient carting distance, and in consequence the price is high and its use is restricted. These plots have shown the best results where the lime has been applied to turnips (as a preventive of Finger and Toe), to potatoes, and to oats laid down with seeds.

MANURES.

The Department's standard mixtures of artificial manures for the following crops, viz.:—Hay, oats, potatoes, turnips, and mangels, were distributed in 1 cwt. bags. These plots have furnished striking object lessons, demonstrating the value of a complete mixture of artificials for the crops mentioned. As a rule, the manures have produced heavier crops of better quality than the "special" or "compound" manures generally sold in the poorer districts. The oat manure was particularly beneficial, producing crops which ripened earlier with a marked increase in the quantity and quality of the grain and straw. The potato manure also gave extremely good results.

BASIC SLAG.

A large number of basic slag demonstration plots were established in the autumn of 1907. The results have entirely confirmed previous experience and have shown that the application of 10 cwts. basic slag per statute acre to old pastures on heavy sour land or reclaimed bog may be relied upon to effect a considerable improvement in the character of the herbage, by encouraging the growth of the finer grasses and clovers.

VEGETABLE SEEDS.

Packets of vegetable seeds comprising carrot, parsnip, onion, kale, early cabbage, savoy cabbage, and in some districts peas, were distributed to about 280 small farmers. As was to be expected, greater attention has generally been devoted to the cabbages and onions than to the other vegetables. On the whole, however, the results were encouraging, and it is hoped that as the value of the several vegetables as items of diet come to be more appreciated the standard of living may be improved.

CHARLOCK SPRAYING.

Where charlock is prevalent in corn crops, plots have been sprayed with a 3 per cent. solution of sulphate of copper applied at the rate of 60 gallons per statute acre, and the destruction of the weed has been accomplished without injury to the corn.

POTATO SPRAYING.

During the spraying season a total staff of thirty-nine men devoted their efforts towards the encouragement and improvement in the methods of potato spraying. The care and attention which is now given to this operation in certain districts of the West compare favourably with any other part of the country. In backward districts, where spraying materials could not be readily procured or where the prices charged were exorbitant, 75 tons of sulphate of copper and 37 tons of washing soda were sold at cost price. Over 1,360 spraying machines were also sold at slightly reduced prices. In addition, the Overseers repaired 981 spraying machines, which were out of order, charging only the cost price of the new parts supplied. A large number of samples of spraying materials was analysed, and it is satisfactory to be able to record that a great improvement in the quality of the raw materials offered for sale in these districts has been effected. In these and many other ways the advantages to be derived from spraying and the necessity for early and thorough application of the mixture are being slowly but surely brought home to those whose prosperity depends mainly upon the success of the potato crop.

POTATO DISEASES.

In the past the most destructive potato disease was ordinary Potato Blight, and the main efforts were therefore directed towards the encouragement of spraying. Of late years, however, other diseases, against the ravages of which spraying is useless, have developed to a serious extent in some districts. These diseases are described either as Stalk Disease, Yellow Blight, or Yellowing. They all cause premature decay of the leaves and stems, and in consequence the yield is greatly reduced.

As the information at present available regarding preventive or remedial measures for these diseases is limited, the Department propose during 1909 to carry out a scientific investigation in the affected areas.

LEAFLETS.

The following leaflets should be referred to in connection with this report, viz.:—

Leaflet	No. 6	Charlock Spraying.
„	No. 8	Timothy Meadows.
„	No. 14	Prevention of Potato Blight
„	No. 17	The Use and Purchase of Manures.
„	No. 22	Basic Slag.
„	No. 35	The Liming of Land.
„	No. 36	Field Experiments, Barley.
„	No. 37	„ Meadow Hay.
„	No. 38	„ Potatoes.
„	No. 39	„ Mangels.
„	No. 40	„ Oats.
„	No. 41	„ Turnips.
„	No. 42	Permanent Pasture Grasses.
„	No. 56	The Cultivation of the Root Crop.
„	No. 58	Sprouting Seed Potatoes.
„	No. 75	Barley Sowing.
„	No. 81	Potato Culture on Small Farms.

Copies of the above-mentioned leaflets may be obtained free of charge, and post free, on application to the Secretary, Department of Agriculture and Technical Instruction for Ireland, Upper Merrion-street, Dublin. Letters of application so addressed need not be stamped.

PROTECTION OF WOODLANDS IN IRELAND.*

II.—*Protection against Fire and Unfavourable Climatic Conditions.*

The dangers which Irish woodlands are exposed to from fire, wind, drought, late frosts, etc., vary with the species of tree, the ages of the trees, and the soils and situations on which the trees are growing, to a greater extent than with the prevalence or intensity of those sources of danger.

Although fire can scarcely be termed a natural enemy of woods, the facilities which exist in the shape of matches, sparks from locomotives or pipes, and the carelessness of persons in general, render a plantation more or less subject to its ravages during the first ten or fifteen years of its life.

Wind is a persistent feature of the Irish climate, and is probably almost as injurious in spring and summer as in autumn and winter, although in different directions. In the former seasons it does much to interfere with and check the growth of most trees, and prevents the production of long clean timber everywhere but in deep valleys and the centre of thick plantations. Severe gales frequently do great damage to middle-aged and mature woods, and many of these storms being cyclonic in character it is practically impossible to take effective precautions against them. In addition to the actual damage or destruction of large numbers of individual trees, these gales disorganise both the management of woods and the home timber trade, and much of the unsatisfactory condition in which many Irish woodlands exist at the present time is due to them. But while nothing can be done to prevent them, their effect may be minimised to some extent by judicious planting, thinning, and felling, and to that extent the forester has things in his own hand.

* The first Section of this Article appeared in the issue of the *Journal* for July, 1908, Vol. VIII., No. 4, page 627.

The following Sections will be published in subsequent issues :—

- III. "Methods of Prevention of Injury to Trees by Animals (*Rabbits, Squirrels, etc.*)"
- IV. "Insect Injurious to Trees and Methods of Prevention (*Pine Beetle, Pine Weevil, Pine Saw-fly, Giant Sirex, Goat Moth, Beech Felled Scale, etc.*)"
- V. "Fungoid Diseases of Trees (*Larch Canker, Ash and Beech Canker, Root Rot and Honey Fungus, etc.*)"

PROTECTION OF WOODLANDS IN IRELAND.

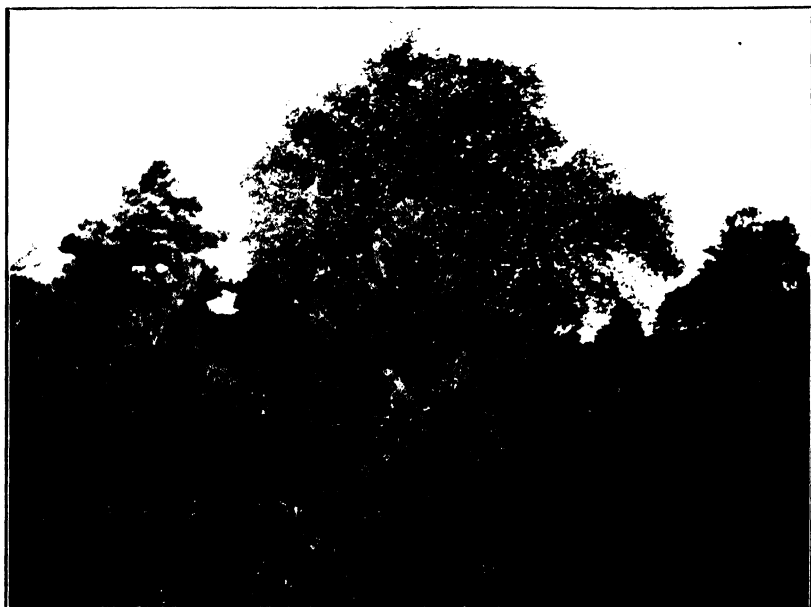


Fig. 1.—Thin and patchy crop of Scots pines and Birch, forming the margin of a plantation. Surface covered with heather, in which ground fires usually originate.



Fig. 2.—Mixed crop of pines and larch. Stems are covered with dead branches, liable to become ignited by ground fires spreading beneath them.

PROTECTION OF WOODLANDS IN IRELAND.



Fig. 3.—Thick crop of 15 years old Scots pine. Dead branches have been pruned from trees, and no danger from fire need be feared.



Fig. 4.—Wind-swept margin of silver fir wood in Sligo. These trees act as shelter belt to wood behind, but would have been more effective had beech or Austrian pines been planted with

Drought is seldom such a serious menace to recently planted ground in Ireland as is the case in the South of England or on the Continent of Europe. While severe droughts cannot be termed a general feature of the Irish climate, many of the soils in this country are not well adapted for withstanding them when they do occur, owing to the frequency of rocky and porous sub-soils, and the thin covering of surface soil with which they are provided. In replanting on such soils it is often advisable to take precautions which tend to reduce the effects of a few weeks' drought, although popular ideas on the local climate might lead one to regard them as superfluous.

Late spring frosts are a well-known cause of injury to most species of trees, and on certain situations are of annual occurrence. Their effect may be avoided to some extent by special methods of replanting, or a careful choice of sites for species most liable to injury: but as in the case of wind and drought, absolutely effective preventive measures are impossible.

In a general way, whatever measures are adopted to mitigate the injuries resulting from the above-named causes must be associated with the work of clearing and planting. It is beyond question that careful precautions taken at the outset of a plantation's existence may go far in reducing the effects of some of those injuries, and in practically preventing others altogether. In the case of woods already advanced in age, little can be done to remedy the neglect or omission of the planter, hence the importance of adopting measures at the time of planting which may have a far-reaching influence upon the ultimate success of the plantation.

In Ireland the likelihood of plantations being injured by fire decreases rapidly as they advance in age.

Protection from Fire. For a few years after planting the surface of practically all plantations is covered with a thick crop of such plants as grass, gorse, heather, bracken, etc., all more or less inflammable at certain seasons of the year. Probably the most dangerous months are those of March and April, when a large quantity of dead material remains on the ground, with little or no admixture of the green, sappy growth which springs up later in the season. When dry weather has lasted for a few days in these months such material is easily ignited by a match thrown down in carelessness or with malicious intent, and in a few minutes a large area may be rapidly burnt over, and the

young trees on it either destroyed or badly damaged. With certain coniferous trees carrying dry resinous branches a surface fire of this kind will sometimes extend to the crowns of the trees, and plantations of twenty, or more, years of age be completely destroyed; but this form of injury is less likely to occur in a damp country such as Ireland than in hotter and drier continental climates.

Naturally the plantations most liable to injury from fire are those growing alongside main roads, railway tracks, footpaths, etc., and such as consist of coniferous trees, with evergreen resinous needles, which ignite readily. In these, precautions against fire are desirable to a greater or less extent, according to the nature of the surface growth and the ages of the trees. Species most liable to suffer from a surface fire are those of pines, spruces, silver firs, etc., while deciduous trees generally, such as oak, elm, ash, birch, etc., can usually survive if provided with true bark within a foot or so of the ground, which protects the lower part of the stem from fatal injury. The former, therefore, should always be kept well back from the margins of roads and paths at the time of planting, and a belt of deciduous trees, such as oak, birch, beech, and others placed immediately adjoining the outer edge. Hazel or Spanish chestnut, which can be periodically coppiced, and kept thick and close near the ground, are also useful for this purpose.

Another method, of a more costly but effectual nature, is that of clearing the ground beneath or between the trees, and removing the inflammable material in early spring. This can be cut with a sickle or hook for a few yards back from the edge, or if the soil is loose and friable the growth may be cut with a sharp but strong hack or hoe. On level ground, free from old stumps or stones, a row or two of trees may be omitted when planting, and the bare space turned over annually with the plough (see Fig. 5).

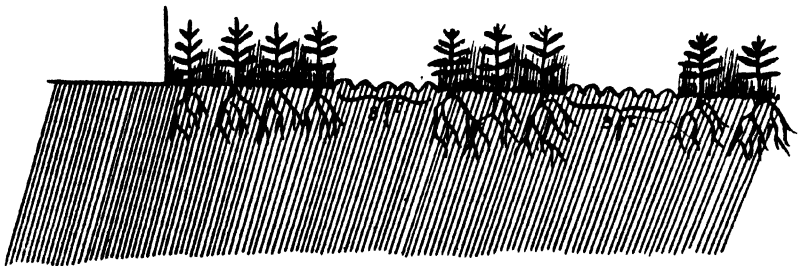


FIG. 5.—Showing a method of checking ground fire by leaving bare spaces between the trees.

These bare spaces prevent a surface fire from gaining strength, and if supplemented by cleaning the surface between them will afford fairly complete protection.

On dry soils, and in plantations of Scots pine, through which railway lines run, permanent fire breaks should be formed by throwing up banks of earth a few yards back from and parallel to the track. These banks should be planted with beech, birch, chestnut, or some other quick growing deciduous tree, which will effectually shade the ground, and suppress surface growth beneath them, and at the same time grow high enough to intercept cinders thrown out by engines. Steep gradients are fertile sources of plantation fires adjoining railway tracks, and should always be protected in some such manner (see Fig 6).

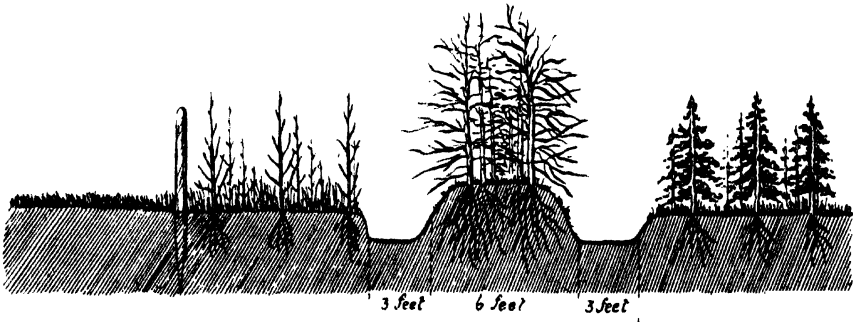


FIG. 6.—Showing a hedge and bank formed to check surface fires.

As already pointed out, wind is injurious to tree growth, from both the physical and mechanical points of view. The strong winds of spring and summer tend to lower the temperature of the air surrounding the leaves, and check the height growth of trees in exposed situations. On dry soils evaporation of moisture from the thinly protected surfaces of the shoots and leaves proceeds at a rapid rate in windy weather, and the normal root systems of the trees can barely make good the loss, and stem and height growth are retarded to accommodate themselves to the climatic conditions. Mechanically, wind damages trees during the summer by breaking or injuring the immature shoots, while they more or less persistent south-west winds of late summer and early autumn tend to produce crooked and leaning stems, except in sheltered situations. The stronger winds and gales of autumn and winter do more conspicuous damage by breaking off large

Protecting Woods against Wind.

branches, or overthrowing trees by the roots, in a way which needs little description, so common an occurrence is it in most winters.

While something may be done to counteract the effects of the above results from ordinary winds, the fact must be recognised that gales of exceptional severity, and of a more or less cyclonic nature, frequently sweep across the country, and little or nothing can be done to minimise their results. Such storms as that of February, 1903, are not only able to overthrow the most firmly rooted tree, or break it off short near the ground, but cause gaps in the thickest plantations which ordinary winds would leave untouched. Such gales attack trees from all points of the compass and in the most sheltered situations, and do much to disorganise the systematic management of estate woods.

Against ordinary winds and moderate gales the following measures may be taken with a fair prospect of being ultimately attended with success:—

1st. The formation, at the time of planting, of a shelter-belt of wind-firm species on the exposed sides or parts of a plantation.

2nd. The admixture of wind-firm species throughout a plantation of shallow rooting trees.

3rd. The arrangement of clear fellings, so that no portions of the wood, except very young or very old or mature trees, are suddenly exposed to the prevailing wind.

The first of these measures is probably the most effectual for small plantations, which are usually felled and replanted at once. In such cases a shelter-belt, about one chain in width, should always be planted round the margins and along any exposed ridges throughout the wood. These belts should be formed of such species as sycamore, beech, oak, Spanish chestnut, etc., on good ground and at moderate elevations, or of Corsican pine, silver fir, and beech, on poor land and exposed sites. Where the soil is extremely poor or exceptionally exposed, the outer row or so should consist of white American spruce or birch, and near the sea Austrian pine is probably the most suitable species. It is important that strong, stout, well-rooted plants should be used at the outset, the plants kept clean and free from rubbish for the first few years, and later on thinned out sufficiently to enable them to develop into strong, heavily-crowned trees. Where larch or

other "nurse" species are mixed with such trees they should be removed fairly early, as any crowding will interfere with the utility of the shelter trees in after life.



FIG. 7.—Showing permanent shelter belt maintained on the wind-ward side of a wood.

Belts of this kind are also useful when planted across the slope, or along exposed ridges, on ground facing the prevailing wind. On such slopes the mutual shelter afforded by trees of the same height and age is more limited than on flat ground, and the influence of marginal belts extends but a short distance inwards.

The utility of these belts consists not only in the shelter they afford the crop with which they are planted but, when maintained as a permanent fixture, in the general effect they exercise in breaking strong winds in their vicinity, and in sheltering succeeding crops. Too often, when a small wood is felled, no attempt is made to reserve useful shelter trees round the margins, and shelter screens of sixty or more feet in height are destroyed, and the best part of a century is required to replace them (see Fig. 8.)

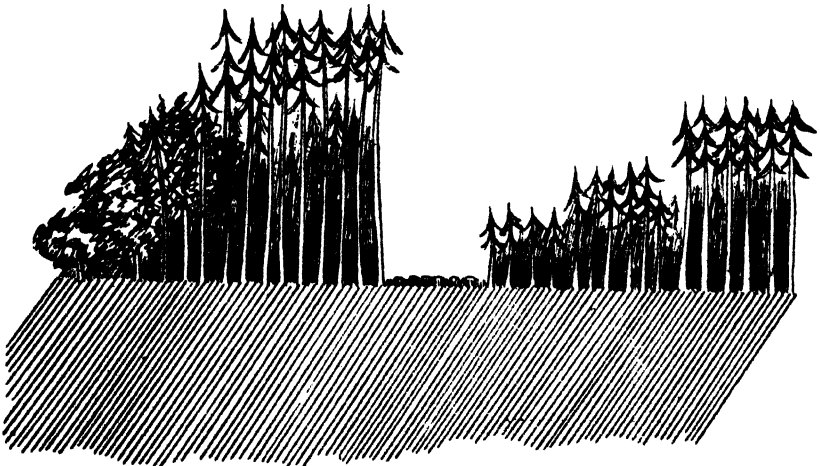


FIG. 8.—Showing a series of fellings and re-plantings made towards the prevailing winds.

To maintain these belts in a satisfactory condition it is necessary to replace wind-blown or decayed trees from time to time with shade-bearing species, such as beech, silver fir, or Spanish chestnut, or with other species, according to overhead space and light. In this way the belt gradually becomes uneven-aged, and, although presenting a less solid front to the wind in this form, is still sufficiently thick to serve as an effective screen.

The second method of mixing wind-firm species throughout a wood is usually desirable when planting spruce or larch on a hill-side. These two species are more liable to be wind-thrown than any, on account of their shallow root systems, and a certain admixture of beech, silver fir, pines, etc., will give the necessary shelter and stability to the crop. As a rule, it is best to mix the larch and beech together in the proportion of three of the former to one of the latter, while pines or silver firs should be planted in narrow belts at short intervals across the line of the wind. In this way the bad effects of unsuitable mixtures will be avoided.

The third method referred to, that of clearing the ground towards the windy quarter, is chiefly applicable to large woods which are being cleared and replanted within a few years. It is best suited for flat or uniformly sloping ground, which is equally exposed at all points to the wind coming from one quarter. It is more easily advocated than carried out in practice, as the cutting of various portions of a wood must depend greatly upon the age and condition of the crops they carry, and the demand for the timber. Fig. 4 explains this method better than words.

As general measures in protecting woods against wind, the following may be mentioned. Drainage of the ground should always be attended to where necessary, so that the root systems of the trees may be kept in a healthy condition, and become well developed. Thinning should be carefully attended to along the margins of woods or at exposed points. Heavy thinning should never be made suddenly, especially when the trees have been in a crowded condition previously. Shallow rooting trees should never be planted in large masses, unless mixed with wind-firm species, or confined to sheltered ground.

The chief damage done by drought in Ireland is confined to young plantations or naturally dry ground.

Protection against Drought. The principal months to be feared are those of May and June, when drying winds, hot sun, and night frosts occasionally com-

bine to check the growth or endanger the lives of newly-planted

trees before they have completely recovered from the operation of transplanting.

The most effectual method of combating drought in such cases lies in the preparation of the soil and early planting. As regards the former, deep trenching is the most satisfactory method, but in ordinary forestry operations this is too expensive. Digging pits for the trees can usually be carried out, however, without too great an outlay, and if the holes are of sufficient size and depth, conditions are provided which go far to counteract the effect of droughts. In ground containing a certain amount of clay, or which is full of roots of trees, as in old woodland, the holes are best dug in autumn and the trees planted in the following spring, as this affords the soil an opportunity of weathering.

Early planting must depend to some extent upon species and conditions under which the work takes place. When large plants are used, belonging to coniferous or evergreen species, or exposed sites are planted, autumn planting may lead to a large number of deaths from wind-rocking or exposure to cold winds during the winter months. In such cases planting is seldom advisable until February, unless small plants can be used and the planting effected in early autumn, so that the trees become more or less established before winter sets in. As a general rule, all dry and friable soils, with a surface growth which allows small plants to be used, should be planted in autumn, if possible, or in February at latest.

Late spring frosts in April, May, and occasionally June, frequently do a great deal of damage to

Protection against certain species of forest trees. While early

Late Frosts. leating species are more liable to suffer damage, they are, at the same time, less

sensitive than late leafing trees, and, as a rule, a destructive frost depends not only upon its intensity, but upon the time of the year at which it occurs.

The species most easily damaged by the effects of frosts in May and June upon their young growths are ash, beech, silver fir, Spanish chestnut, oak, spruce, etc. Frosts in April usually do most damage to larch, especially to young plants and seedlings. Such species as pines, sycamore, poplar, willow, birch, alder, elm, hornbeam, etc., are seldom seriously damaged by late frosts, and in planting spots liable to frost damage, such as hollows, low-lying flat ground, etc., one or the other of these species should

be used, if not for planting as the main crop, at least for forming a protecting crop a few years in advance of the more tender species. In the latter case, the hardier species should be planted in rows about six feet apart, and allowed to form a canopy of branches overhead before the more tender species are planted between them. As those species grow up, the branches, and finally the tops of the shelter trees, can be cut back, as when the former have attained a height of six or eight feet the danger from frost damage gradually decreases.

Other things being equal, it is found that the injury resulting from the freezing of young growths and shoots is proportional to the rapidity with which the temperature of the air rises after a frost. Trees growing on western slopes are consequently more likely to escape frost damage than those facing the morning sun, and this fact should be borne in mind when planting species susceptible to injury from late frosts.

A. C. FORBES.

EARLY POTATO GROWING.

This industry was prosecuted in Ireland with great vigour during the season 1908. At each centre the area planted with early potatoes was not less than in the previous year, and the Department gave practical assistance both by grants and instruction. Following the usual practice, experiments were established in new districts, and in some cases with excellent results.

It is unfortunate that all this energy should have met with such a poor reward. The season has been much the least prosperous of any since the Department commenced this work. The initial cause of the unsatisfactory result was a severe frost towards the end of April, which caught the crops at a very advanced stage when tubering had already commenced. The result of this frost was to reduce the crop in some cases by one-half, in others even more, and also to throw the crop so late that it came on the market simultaneously with English crops which had suffered no reverses. The particulars given will show exactly with what adverse circumstances growers may occasionally have to contend. But, though the profits of 1908 were small, and in many cases losses were experienced, there is no reason for discouragement, as a disaster such as happened in 1908 is not likely to occur frequently.

At Clonakilty, in County Cork, the usual acreage was grown by the more experienced growers, and seven new experimental plots were established by the Department. Although the crops at Clonakilty suffered severely from the frost, they seemed to have recovered better than at some other centres, and at the end of May had a very promising appearance. English and Scottish merchants began to come over about this time, and two crops of the largest acreage in the district, belonging, respectively, to Monsignor O'Leary and Mr. John Crowley, were sold to a Glasgow merchant at £40 per statute acre for the growing crop. These, so far as is known, were the only sales in the district that were made in this way, and growers who were not so fortunate had to be content with much less lucrative returns. The seven experimental plots produced the nett prices

per statute acre of £14 12s. 6d., £18, £20 10s., £22 12s., £22 16s., and £23 10s. after all expenses of marketing and transit were deducted.

There is one grower in Clonakilty, Mr. Canty, whose crops I have always regarded as a standard and as an illustration of what might be done. This year Mr. Canty had an excellent crop somewhat late, and he did not succeed in selling the potatoes growing. He had consequently to fall back upon the method of consigning to Glasgow and elsewhere, and not being prepared for it was taken somewhat at a disadvantage. Nevertheless, the returns for his entire crop, after deducting all expenses of marketing, commissions, and carriage, realised the nett price of £26 per statute acre.

In the neighbourhood of Youghal there was grown, as in previous years, a larger area than at any other centre in the South of Ireland. **Youghal, County** Growers in that district have shown the **Cork.** most commendable zeal and enterprise, and the acreage in 1908 was somewhat in excess of any former year. In their case, however, the frost seems to have been exceptionally severe, and when I visited the district in the middle of May the crops generally had a poor appearance, many of them plainly indicating, even at that early stage, that they would be entirely unremunerative even if good prices were obtained. The potatoes were also later than Clonakilty, and only a very small area was ready for digging before the Ayrshire crops were being sold in the Glasgow market. It speedily became evident that, unless the growers were to suffer a very heavy loss, some steps would have to be taken for selling in the home market. Fortunately the greater portion of the growers had formed themselves into a Co-operative Society under the direction of the Rev. Michael Ahern, c.c., with one of the growers, Mr. John Dea, as Secretary, and this organisation enabled them to formulate schemes for marketing which showed no little ingenuity and a most commendable degree of self-help. As already remarked, many of the crops were almost a total failure as respects yield, and it is needless to enter into any detailed account of these, but the records of a few of the more experienced growers will indicate the fluctuation in the values of crops that were really well grown and managed.

	£	s.	d.
Mr. Edward Scully grew 2 roods and 30 poles, for which the nett sum received	14	7	0
Add to this the value of 13 cwt. seed retained at 4s. 6d. per cwt.,	2	18	6
making the total return,	£17	5	6

which is equal to £25 2s. 6d. per statute acre.

	£	s.	d.
Mr. Michael Barrett grew 2 roods, for which he received	10	7	5
Add to this the value of 1 ton seed retained,	4	10	0
making the total return,	£14	17	5

which is equal to £29 14s. 10d. per statute acre.

	£	s.	d.
Mr. Michael Gleeson grew 1 acre 3 roods and 10 poles, for which he received	22	17	11
Add to this the value of 1 ton 5 cwts. seed retained,	5	12	6
making the total return,	£28	10	5

which is equal to £15 14s. 6d. per statute acre.

	£	s.	d.
Mr. James Griffin grew 1 acre 0 roods and 30 poles, for which he received	15	9	4
Add to this the value of 1 ton seed retained,	4	10	0
making the total return,	£19	19	4

which is equal to £16 16s. 3d. per statute acre.

	£	s.	d.
Mr. P. Kirk grew 1 rood and 20 poles, for which he received	8	14	4
Add to this the value of 5 cwt. seed retained,	1	2	6
making the total return,	£9	16	10

which is equal to £26 4s. 10d. per statute acre.

	£	s.	d.
Mr. M. Kirk grew exactly half an acre, for which he received	9	0	0
Add to this the value of 2 cwt. seed retained,	0	9	0
	<hr/>		
making the total return, £9 9 0	£9	9	0
	<hr/>		

which is equal to £18 18s. per statute acre.

	£	s.	d.
Mr. D. Flavin grew 1 acre 3 roods and 20 poles, for which he received	26	12	4
Add to this the value of 1 ton seed retained,	4	10	0
	<hr/>		
making the total return, £31 2 4	£31	2	4
	<hr/>		

which is equal to £16 12s. per statute acre.

	£	s.	d.
Mr. William Cashman grew 3 roods and 20 poles, for which he received	15	4	6
Add to this the value of 1 ton seed retained,	4	10	0
	<hr/>		
making the total return, £19 14 6	£19	14	6
	<hr/>		

which is equal to £22 10s. 10d. per statute acre.

These figures are certainly a serious falling off from former years, but the best of them serve to show what can be done when the Irish crop is early enough for the Glasgow market. Only three days of Glasgow were available for marketing Youghal potatoes this year. The growers at Youghal were asked by the Secretary of the Society to put their own valuations upon the catch crop which succeeded the early potatoes. These estimates vary very much, the average being about £6 10s. per acre, which is probably not very far from correct. When that crop, which has practically cost nothing beyond the labour of tillage, is added to the revenue of the potatoes, the return is fairly good even at the very worst.

In addition to the growers who formed the Co-operative Society, there were several growers who marketed their own produce, some in Glasgow and Liverpool, and some in Cork. The results were no better than those given above.

EARLY POTATO GROWING, 1908.



Fig. 1.—Digging Early Potatoes. Co. Waterford, June, 1908.

EARLY POTATO GROWING, 1908.



Fig. 2.—A good crop of Early Potatoes, Co. Waterford, June, 1908.

There is a district—Ardmore—also in the neighbourhood of Youghal, but on the Waterford side, where some experiments had been successfully carried out in previous years, and where a considerable quantity was grown. In every case the crop was bad, with yields as low as 2 tons per acre. I am not able to account for this failure, as the district seems to me to be ideal for the purpose, and the farmers accustomed to tillage and market-gardening. The conclusion that I came to was that the land was insufficiently manured with farmyard manure, growers relying almost exclusively on the sea-ware.

Ardmore, County Waterford.

At Dungarvan, in County Waterford, the experiments were tried for the first time in 1908, and with very excellent results. In this district the crops seem to have recovered better than almost anywhere else, and produced at the rate of $6\frac{1}{2}$ to 7 tons per acre in June, which is a fair crop for any year, but a very good one considering the drawbacks experienced in 1908. These were all raised in one day (27th June) and sent to Liverpool, where the price realised was only £5 5s. per ton, and the expense of marketing and transit was £1 19s. per ton, the nett revenue being from £20 to £23 per acre. The growers in this district are all keen to continue for another year, and the Department are giving them every encouragement, and have selected a considerable number of fresh experimenters.

Dungarvan, County Waterford.

In County Wexford, in the neighbourhood of Kilmore, there were fourteen growers. The experience in this district is precisely the same as in others—crops checked with frost and coming up irregularly. Seven of the growers sold their crops growing at the following prices:—£18, £20, £20, £21, £22, £23, and £23 10s. per statute acre. All the others consigned their produce to Liverpool with varying results, the nett revenue received ranging from £14 4s. to £25 15s. 8d. per statute acre.

Kilmore, County Wexford.

In the Sligo district the experience was similar to that of the other centres. As in former years, a report has been received from Mr. J. A. Cooper, the agent for Sir Josslyn Gore-Booth, Bart., which is well worthy of close consideration by those who are engaged, or propose to engage, in

Lissadell, County Sligo.

this industry, and probably illustrates the best that can be done in that district. The following is Mr. Cooper's report:—

“ I have pleasure in sending you herewith particulars of our Early Potato Growing in 1908. Some of our potatoes in sandy soil suffered from being cut down by frost, whilst those in heavier soil, although not retarded by frost, were handicapped by the fact that they were planted late, owing to the unsuitable state of the ground, on account of the heavy rains in early spring. ‘Ninetyfold,’ as usual, was the earliest dug, and each year, since 1902, this potato has proved the best all-round variety both for earliness and yield. ‘Duke of York’ this year was almost as early, whilst a statute acre of ‘Epicures,’ planted April 26th, were allowed to remain in the ground until August 7th, and yielded 10 tons 5 cwt. The total results of our growing were as follows:—

Area (Statute.)	Yield.	Gross Receipts.	Expenses.	Nett Receipts.
A. R. P.	T. C. Q. Lb.	£ s. d.	£ s. d.	£ s. d.
10 3 0	62 2 2 0	264 1 5	19 0 9	245 0 8
	Includes 19 Ton 10 Cwt. Seed.	Including Seed taken @ £4 per Ton.		

“ The expenses referred to above are for marketing the crop, freights outward, and on return empties, deductions by salesmen for portorage, commission, etc., also telegrams and stamps. They are a great deal less in proportion this year on account of our having marketed more of the crop in local districts. These expenses, of course, do not include anything of the cost of tillage, *i.e.*, seed, labour, manures, carting, etc. The markets in Scotland and England were against us this year, and the average price we received, gross, £4 5s. 0d. per ton, was a long way below our average in any year since we started growing. On the other hand, prices slumping badly at the start, we kept the bulk of our crop longer in the ground, consequently the average yield per statute acre—5 tons 15 cwts. 2 qrs.—was a good deal in excess of our average for previous years, and helped, in some measure,

to make up for the low price received per ton. The average return per statute acre (gross) was £24 11s. 3d., which, in my opinion, is not a very remunerative return.

"It may, perhaps, interest you to compare the results of our growing this year against the five previous years, and the following are the figures for same:—

Year.	Commenced digging on	Total area for Sale, (Statute).	Yield.	Gross Receipts.	Average received per ton (Gross.)	Average return per Statute Acre (Gross.)	Average yield per Statute Acre.
		A. R. P.	T. C. Q. Lb.	£ s. d.	£ s. d.	£ s. d.	T. C. Q.
1903	June 9th.	2 3 39	15 12 1 21	159 14 4	10 0 0	33 0 0	5 4 0
1904	" 7th.	4 3 5	22 3 1 0	181 15 1	8 4 0	38 0 0	4 12 0
1905	" 13th.	5 2 20	34 18 2 7	230 11 5	6 12 0	41 0 0	6 4 0
1906	" 23rd.	4 2 21	21 17 3 21	148 10 4	6 15 0	30 0 0	4 14 0
1907	" 11th.	15 0 12	55 11 0	364 12 0	6 11 3	26 0 0	4 5 0
1908	" 22nd.	10 3 0	*62 2 2 0	264 1 5	4 5 0	†24 11 3	5 15 2
*Including 19 tons. 10 cwt. Seed						†Including taken @ ton.	Seed £4 per

"The above will show the fluctuations we have had here, both in regard to the price received and the yield per acre, and beyond saying that 1908 has been our worst year, the figures require no further comment from me."

At Rush, in County Dublin, the frost was exceptionally severe, and the plants were cut down an inch below the ground. The varieties grown here, however, are chiefly of a later and hardier character. They had not reached the tuberizing stage, and recovered to produce a very excellent crop. Although the prices in Dublin market were lower than usual, the Rush growers seem to be satisfied with their returns.

The varieties principally grown at the various centres were Sutton's Ninetyfold and Sutton's Epicure.

Varieties. The former is much the earlier, and when not subjected to checks will be found to be the best for the Irish grower. On the other hand, Epicure has really given the best results in some districts this year, particularly at Youghal. Being of a hardier nature than the Ninetyfold they recovered much more rapidly, and being also a little

later were not caught at such a dangerous stage. Moreover, the produce was sold in the home market, and there was not the same prejudice against a round potato with deep eyes as there would have been in an English market. Epicures are not wanted in England, and growers would do well to keep that in view.

A season like 1908, where the crop was subjected to an exceptional reverse, illustrates the need of good

Cultivation. farming to procure the best results with early potatoes. In all the cases where the crops had been well manured with farmyard manure they recovered well and produced good results, but where this had been neglected or stinted, and where the tillage was indifferent, the results were truly deplorable. The catch crops succeeding the potato crop were not so good as in former years, owing, no doubt, to the later period at which they were planted, and also to the dry and ungrowthy August.

Adverse conditions are experienced in all countries. Happily such seasons as 1908 are exceptional, and Irish growers having now succeeded in establishing their produce in English and Scottish markets need not be unduly disheartened or apprehensive of the future.

M. G. WALLACE.

DISPLAYS OF IRISH AGRICULTURAL PRODUCE IN THE UNITED KINGDOM IN 1908.

The Department of Agriculture and Technical Instruction for Ireland have been exhibiting Irish agricultural produce at Exhibitions and Shows in the United Kingdom, with the object of encouraging the sale of such goods amongst wholesale and retail buyers by demonstrating the high character and great variety of Irish agricultural goods.* During the year 1908 Irish products were exhibited by the Department at the following Shows and Exhibitions:—

The Grocers and Bakers' Exhibition.	Birmingham	February.
Do. do.,	Glasgow,	April.
Do. do.,	Cardiff,	September.
The British Dairy Farmers' Association Annual Show.	Islington,	October.
The Irish Industrial Development Association's Annual Exhibition.	Cork,	November.
The Aónach of the Gaelic League of London.	Westminster,	November
The Scottish National Fat Stock Show.	Edinburgh,	December.
The Smithfield Club Show,	Islington,	December.

There has been a gratifying increase in the interest taken in these exhibits by the firms in the various trades represented on the Department's stands: a considerably increased area has been required by the Department, and this increased area has been fully occupied by exhibits.

The following table indicates the number of entries at each place in respect of each commodity exhibited, and the total for the year.

*See *Journal*, Vol. VIII., No. 1, pp. 45 *et seq.*, and Vol. VIII., No. 3, pp. 491, *et seq.*

TABLE.

Commodities entered.	Birmingham.	Glasgow.	Cardiff.	Dairy Show.	Cork.	Aonach.	Edinburgh.	Smithfield Show.	Total Commodities entered at all Shows.
Bacon,	10	13	5	8	5	6	11	8	66
Biscuits,	1	—	—	—	—	—	—	—	1
Butter,	11	16	17	27	10	16	—	3	100
Bulbs,	—	—	1	1	—	—	—	—	2
Cheese,	1	2	3	3	1	2	—	1	13
Cider,	—	1	1	—	2	—	—	—	4
Confectionery,	2	—	—	—	1	—	—	—	3
Cream,	2	8	4	5	1	2	—	3	25
Dried Milk,	1	—	—	1	—	—	—	—	2
Eggs,	17	13	5	7	3	2	2	4	53
Flowers (cut),	—	2	—	—	—	—	—	—	2
Fruit (Apples),	—	—	3	1	3	1	—	1	9
Honey,	—	—	—	1	—	1	—	—	2
Jams,	2	1	4	1	3	1	—	2	14
Margarine,	2	1	1	—	—	1	—	1	6
Oats,	—	—	2	—	1	—	—	—	3
Oatmeal,	3	2	1	1	1	1	—	2	11
Pickles,	1	—	—	—	—	—	—	—	1
Potatoes (Eating),	—	—	5	—	—	—	—	—	5
„ (Seed),	—	—	3	3	1	2	—	4	13
Potted Meats,	1	3	1	1	1	1	—	1	9
Poultry,	—	—	—	—	1	—	7	10	18
Soap,	2	2	2	2	2	1	—	2	13
Tobacco,	1	1	1	—	1	1	—	1	6
Vegetable Soups,	1	1	—	1	1	1	—	1	6
Vinegar,	1	—	—	—	—	—	—	—	1
Wine (Home made),	1	1	1	1	1	1	—	1	7
Total Commodities entered at each Show,	60	67	60	64	39	40	20	45	395

NOTE.—At Edinburgh, exhibits of Bacon, Eggs, and Poultry only were invited.

The attendance of members of the grocery, bakery, provision, and allied trades at each exhibition was satisfactory, and as the general public attended in very considerable numbers, it is manifest that exhibitors on the Department's stands not only brought their goods prominently under the notice of wholesale and retail

traders, but also obtained an excellent advertisement, as the Department's stands, by their prominent size and by the variety of goods displayed upon them, attracted a very general attention at all these exhibitions and shows.

At most of the exhibitions, and notably at Glasgow and the British Dairy Show, very considerable eagerness was shown by traders to purchase the Irish goods, and thus secure the advertisement of having their names and business cards placed over the exhibit purchased. In some instances the Irish exhibits at the conclusion of the show were prominently displayed in shop windows, with notices calling attention to the fact that the goods had been purchased from the Irish Section.

The newspaper press—and this is especially true of the London daily press—devoted very considerable attention to the Irish displays at the various exhibitions: in some cases devoting long articles to the Irish export trade in agricultural products, and calling particular attention to the excellence of Irish butter, bacon, and eggs.

It may be further pointed out, as indicating the very wide interest taken in the Department's displays, that the Irish exhibit at the Smithfield Club Show was honoured by a visit from H.R.H. the Prince of Wales, who evinced a very considerable interest in the Department's stands, made a number of inquiries concerning the exhibits, and expressed his approval of the display.

It may be of interest here to devote a short space to a brief consideration of some of the more important products exhibited.

It will be noted from the table on page 264 that the exhibits of bacon were greatest at Birmingham, Glasgow, and Edinburgh, and this appears to be due to the fact that an opinion exists, especially amongst curers in the North of Ireland, that it is not profitable to exhibit in places where their bacon and style of curing are not well known. It would appear, however, that the experience of some bacon firms who exhibited at all the shows was that even in districts where the North of Ireland style of bacon curing is little known, a good market could nevertheless be opened up.

It will be noted that the entries of butter exhibits varied considerably, rising from 11 at Birmingham to 27 at the London Dairy Show, and then falling to 3 at the Smithfield Show. The number of entries naturally varied with the nature of the show,

but it is interesting to note that one of the three exhibitors at Smithfield informed the Department's representative at the conclusion of the show that his display at Smithfield had given him the best result of the year.

There were 30 displays of eggs at the two exhibitions held in the spring, and only 23 at the six shows and exhibitions held in the later part of the year. This tendency on the part of egg shippers to exhibit only when eggs are plentiful and cheap and not when they are scarce and dear is founded on a false business policy. More inquiries from large egg buyers were received at the Smithfield Show in December than at either of the spring exhibitions, and buyers are more attracted by a good display of eggs when they are scarce than when they are plentiful. Again it should be remembered that although business may not immediately result from showing eggs in the autumn and winter (when indeed the exhibitor could not perhaps supply any great quantity), it is at this time of the year that good and reliable buyers can be secured.

Cheese has been exhibited at all the exhibitions except that held in Edinburgh, and it has been very well received by the wholesale and retail trade, although the fact that cheese was made in Ireland seems to have been almost unknown in Great Britain. As it was deemed advisable to make the fact generally known that cheese is being made to a considerable extent in Ireland samples of the various makes were freely given to the provision trade and to the general public. On the whole, good results followed this practice, particularly at one of the shows where a quantity of British cheese was shown. The day before the show opened a large wholesale buyer appraised the value of the Irish cheese shown at 50s. per cwt. On the second day of the show this cheese was sold at 64s. per cwt. This large increase in value was due to the fact that in the meantime large numbers of the public had tasted the Irish cheese, the flavour had met with their approval, and a demand was created.

The exhibits of cream aroused much interest—especially those shown in the new Taylor's Hygienic Creamery packages—and the opinion was expressed by many visitors that the introduction of this type of package would distinctly improve the possibilities of the Irish cream trade in Great Britain.

DISPLAYS OF IRISH PRODUCE IN THE UNITED KINGDOM.



Fig. 1.—General view of the Department's Stand at the Smithfield Fat Stock Show, London, December, 1908.

DISPLAYS OF IRISH PRODUCE IN THE UNITED KINGDOM.



Fig. 2.—Portion of the Department's Stand at the Smithfield Fat Stock Show, London, December, 1908. Poultry.

The following articles displayed at the 1908 shows were not exhibited in 1907:—Bulbs, Oats, Seed Potatoes, Eating Potatoes, Soap, and Irish grown Tobacco. It is understood that the exhibition of these commodities gave satisfactory results to the exhibiting firms.

During 1907 and 1908 the Department have exhibited Irish products at nineteen shows and exhibitions. The policy of placing before the trade and the general public of Great Britain the highest class of Irish produce has unquestionably produced good results. It has stimulated the demand for Irish produce, and it has specially emphasised the demand which exists for the very highest quality goods turned out in a finished manner, and in accordance with market requirements. It may be regarded as certain that there is practically no limit to the demand in Great Britain for the best quality of Irish bacon, butter, and eggs. It is also certain that it is along the line of the best produce, well handled, rather than that of inferior and badly handled produce, that trade extension must proceed. Many of the exhibiting firms have satisfied the Department that by exhibiting they have derived very considerable benefit from an advertising point of view, and have at the same time considerably increased their business in the places visited. Other exhibitors who have not done so well have chiefly themselves to blame. Some have shown themselves too ready to open accounts without assuring themselves of the financial stability of the persons with whom they have carried on trade.

Others, though they have sent goods for exhibition, have sent no price lists, nor letters of advice, nor trade cards, and as a result no information has been available for inquirers. Others again, though they have not been so remiss, have failed to follow up inquiries, or, in some cases, to reply at all to traders asking for information.

By far the most successful results have been obtained by traders who had agents to represent them at the exhibition, to look after their interests, to quote prices, to take orders, and to follow up inquiries by personal visits to the local traders.

In conclusion, a few suggestions may be given to persons who are thinking of exhibiting in the future.

Some Suggestions. Before entering produce, information should be obtained as to whether it is likely that the article or articles can be sold to advantage in the

Such a book as that suggested is intended to show

(1) The names and addresses received at each show ;

(2) What has been done to secure orders:—

(a) By letter, “ L ” ; (b) By quotation, “ Q ” ;

Where orders are received the space is marked “ O ” ;

Where personal calls are made the space should be marked
“ C ” ;

Where an agent calls the space should be marked “ A. ”

Of course such a book could be adapted to suit different businesses.

The adoption of some such system as that outlined should tend to make the action taken by the traders to secure business much more methodical, and as system, method and order are amongst the most essential elements of business success, the regular adoption of suitable methods is likely to lead to satisfactory results.

FLAX EXPERIMENTS, 1907.

I. MANURIAL EXPERIMENTS.

Experiments on the manuring of the flax crop have been conducted annually by the Department since 1901. From 1901 to 1904,* inclusive, the results showed clearly that it is not economical to apply quick-acting nitrogenous and phosphatic manures to flax, but that this crop responds readily and with profit to the application of potassic manures. The experiments were, in 1905,† so modified that the results should afford evidence bearing on the following questions:—

- (1) Which is the most suitable of the three common potash manures, *i.e.*, kainit, muriate of potash, and sulphate of potash?
- (2) Is such manure best applied in winter or in spring?
- and (3) May a dressing of a potash manure be profitably supplemented by a slow-acting nitrogenous manure, such as rape meal?

The experiments carried out in 1907 were identical with those of the previous year, and were planned as follows:—

Plot 1 received no manure.

Plot 2.—Kainit, at the rate of 6 cwt. per statute acre, applied in winter.

Plot 3.—Kainit, at the rate of 6 cwt. per statute acre, applied at time of sowing seed.

Plot 4.—Muriate of potash, at the rate of $1\frac{1}{4}$ cwt. per statute acre, applied in winter.

Plot 5.—Muriate of potash, at the rate of $1\frac{1}{4}$ cwt. per statute acre, applied at time of sowing seed.

Plot 6.—Kainit, at the rate of 3 cwt., and rape-meal, $2\frac{1}{2}$ cwt. per statute acre, applied in winter.

Plot 7.—Sulphate of potash, at the rate of $1\frac{1}{2}$ cwt. per statute acre, applied at time of sowing seed.

The dressings given to plots 2, 3, 4, 5, and 7 contain approximately the same amount of potash, and the relative value for flax of the three potash manures is obtained by comparing the

* See *Journal*, Vol. II., pp. 636, *et seq.*; Vol. III., pp. 663, *et seq.*; Vol. IV., pp. 616, *et seq.*; Vol. V., pp. 449, *et seq.*

† See *Journal*, Vol. VII., pp. 250, *et seq.*; Vol. VIII., pp. 423, *et seq.*

returns from plots 2, 4, and 7, or 3 and 5; evidence as to the best time of applying the manure by comparing those of plot 2 with 3, and of plot 4 with 5; whilst the produce of plot 6 yields information as to the advisability of using rape meal with kainit.

The experiments in 1907 were commenced at ten centres in Counties Cavan, Donegal, Down, Londonderry, and Tyrone. At four of these centres, however, the experiments had to be abandoned. At Urney, Dromara, and Dunboe, owing to the wet and unfavourable season—which is particularly disadvantageous on heavy land—the crop was greatly infested with redshank and spurrey and the yield so poor that the results from these centres could not be taken into account. At the Macosquin centre, owing to an oversight, the produce of certain plots was not stored separately, and the test was regarded as unreliable.

The plots, each one-tenth of a statute acre in extent, were measured by an officer of the Department, and the manures and seed were sown, weeding carried out, the produce pulled, retted, spread, stacked, scutched, and baled under his supervision. At four of the six centres, where the experiments were brought to a satisfactory conclusion, they were carried out under the auspices of the local co-operative flax society, and the retted straw was scutched in their mill. The scutched flax was finally sent to Belfast and there valued by three buyers appointed by the Flax Spinners' Association, who again placed their services at the disposal of the Department for this purpose.

During the first two weeks of April the weather was cold and wet, and, except in a few districts, very little sowing was done. During the next fortnight the weather conditions were most favourable for the preparation of the land and the sowing of seed. Excellent seed beds were obtained, and flax sown during this period braided well, although the braids suffered considerably, especially on stiff land from the cold wet weather which followed. A fortnight elapsed before any further sowing could be done, but the late-sown flax was got in under favourable conditions. The weather from the 1st of June until the middle of July was very wet and cold and most detrimental to the growth of the crop, so much so that on heavy soils it was almost a complete failure.

Riga Child seed was sown on each plot at the rate of 60 quarts per statute acre. The dates of sowing the manures and seed and of

pulling the flax at each centre are given in the following statement:—

CENTRE.	Date of Sowing Kainit, Muriate of Potash, and Rape Meal. Plots 2, 4, and 6.	Date of Sowing Kainit, Muriate of Potash, and Sulphate of Potash, Plots 3, 5, and 7, and of Sowing Flax Seed.	Date of Pulling.
		1907.	1907.
Castleblinn Co-operative Flax Society.	14th Jan., 1907.	18th April.	13th August.
Letterkenny Co-operative Flax Society.	7th Dec., 1906.	19th April.	1st August.
River Finn Co-operative Flax Society.	10th Jan., 1907.	24th April.	20th August.
Stranorlar Co-operative Flax Society.	8th Jan., 1907.	25th April.	16th August.
Wm. Kennedy, Caheney, Aghadowey.	19th Dec., 1906.	1st May.	28th August.
Agricultural Station, Ballyhaish.	26th Jan., 1907.	16th April.	13th August.

At the Stranorlar centre the yield was very poor, but as the flax on each plot was uniform the results have been recorded and included in Table I., which gives full details as to the returns from each plot at the six centres.

A summary of the results of the 1907 and the previous years' experiments is given in Table II. below.

TABLE II.—Showing estimated PROFIT or LOSS per Statute Acre due to the use of MANURES applied to the FLAX CROP in 1901, 1902, 1903, 1904, 1905, 1906, 1907:—

Manure.	Quantity per Statute Acre.	1901.	1902.	1903.	1904.	1905.	1906.	1907.
Kainit.	{ In 1901 5 cwt. In other years 6 cwt. }	9s. 3d. profit.	16s. 3d. loss.	7s. 3d. profit.	7s. 4d. profit.	*£1 3s. 2d. profit. £1 10s. 8d. profit.	*£1 1s. 6d. profit. £1 19s. profit.	*£1 8s. 9d. profit. £2 1s. 7d. profit.
Muriate of Potash.	{ In 1901 1 cwt. In 1902, '03, '05, '06 and '07 1½ cwt. In 1904 1½ cwt. '05 and '07. '14 cwt. in 1904. '14 cwt. in 1906. }	£1 6s. profit.	4s. 2d. loss.	17s. 1d. profit.	1s. profit.	*£2 5s. 6d. profit. £1 5s. 8d. profit.	*£2 13s. 7d. profit. £2 16s. 11d. profit.	*£1 1s. profit. 16s. 4d. profit.
Sulphate of Potash.	{ 1½ cwt. in 1904. '05 and '07. '14 cwt. in 1906. }	—	—	—	13s. 2d. profit.	12s. 9d. profit.	£2 8s. 2d. profit.	2s. profit.
Kainit and Rape Meal.	3 cwt. Kainit and 2½ cwt. Rape Meal.	—	—	—	—	*£1 13s. 11d. profit.	*£3 6s. 1d. profit.	* 12s. 1d. profit
Salt.	4 cwt.	—	£1 9s. 3d. loss.	2s. 9d. loss.	—	—	—	—
Kainit and Superphosphate.	3 cwt. of each.	£19s. 7d. loss.	£1 4s. 6d. loss.	11s. 7d. loss.	14s. 6d. loss.	—	—	—
Kainit, Superphosphate and Sulphate of Ammonia.	{ 3 cwt. each of Kainit and Superphosphate, 4 cwt. of Sulphate of Ammonia. }	£2 2s. 8d. loss.	£2 2s. 1½d. loss.	6s. 9d. profit.	£1 4s. 3d. loss.	—	—	—
Rape Meal.	5 cwt.	—	£3 8s. 10d. loss.	2s. 11d. loss.	—	—	—	—
Basic Slag.	5 cwt.	—	£1 13s. 7d. loss.	14s. 3d. loss.	—	—	—	—

* Manure applied during winter.

"Yellowing" was observed at only one centre, but as in other years only on the unmanured plot; the treatment of the other plots with the potash manures rendering them immune from this disease.

EFFECT OF KAINIT.

A.—*Winter Application.*

Scutched flax per statute acre from unmanured plot,	35 st.	12 lb.
Scutched flax per statute acre from kainit plot (early application),	41 st.	8 lb.
Estimated profit per statute acre from use of kainit applied in winter,	£1	8s. 9d.

Kainit was applied, at the rate of 6 cwt. per statute acre, to plot 2, at each centre, in December or January, some three or four months before the flax was sown. The effect of this dressing was to increase the yield of straw and scutched flax at five out of the six centres. At the remaining centre there was a slight decrease in the yield of straw, as compared with plot 1, but the yield of scutched flax was exactly the same on both plots. The average returns from plot 2 at all centres, when compared with those from the unmanured plots, show that both a higher yield and a better quality of flax resulted from the application of kainit, an extra profit of £1 8s. 9d. per statute acre remaining after deducting the cost of the manure.

B.—*Spring Application.*

Scutched flax per statute acre from unmanured plot,	35 st.	12 lb.
Scutched flax per statute acre from kainit plot (spring application),	43 st.	1 lb.
Estimated profit per statute acre from use of kainit applied in spring,	£2	1s. 7d.

The effect of the application of the same quantity of kainit, *i.e.*, 6 cwt. per statute acre, was to increase the yield of straw at five centres, and of scutched flax at all six centres. The relative yield of fibre was also increased as compared with the unmanured flax, and on the average of all centres the dressing gave an extra profit of £2 1s. 7d. per statute acre after allowing for the cost of the manure. In fact, the average returns from plot 3 in 1907 were higher than those resulting from any other manurial treatment.

TABLE I.—Showing the Results from the application

NO. OF PLOT.		1.		2.		3.	
MANURES APPLIED PER STATUTE ACRE.		No Manure.		6 cwt. Kainit, applied during Winter.		6 cwt. Kainit, applied at time of sowing the Seed.	
Name of Co-operative Flax Society or Farmer conducting the Experiment.	Character of Soil.	Retted Straw.	Scutched Flax.	Retted Straw.	Scutched Flax.	Retted Straw.	Scutched Flax.
		lb.	lb.	lb.	lb.	lb.	lb.
Castletinn Co-operative Flax Society.	Medium loam ; gravelly sub-soil.	2,800	420	3,500	570	3,700	570
Letterkenny Co-operative Flax Society.	Heavy loam ; Clay subsoil.	3,960	690	3,950	690	3,920	710
River Finn Co-operative Flax Society.	Deep heavy loam ; clay subsoil.	3,360	600	3,590	670	3,990	710
Stranorlar Co-operative Flax Society.	Peaty loam ; blue clay sub-soil.	1,300	180	1,870	250	1,770	270
Wm. Kennedy, Caheney, Aghadowey.	Medium loam ; clay subsoil.	2,380	490	2,760	530	2,660	630
Agricultural Station, Ballyhaish.	Light loam ; blue clay sub-soil.	3,710	630	4,180	780	4,360	710
Average yield of Retted Straw per acre.		2,923 lb.		3,358 lb.		3,398 lb.	
Average yield of Scutched Flax per acre.		35 st. 12 lb.		41 st. 8 lb.		43 st. 1 lb.	
Percentage of Scutched Flax from Retted Straw.		17.17		17.33		17.75	
Average Value of Scutched Flax per stone,*		6s. 5½d.		6s. 6½d.		6s. 7½d.	
Average Returns from Scutched Flax per acre.		£11 9s. 2½d.		£13 12s. 2½d.		£14 4s. 11½d.	
Average Returns from Tow per acre.		7s. 6½d.		8s. 3d.		8s. 4d.	
Total Average Returns from Flax and Tow per acre.		£11 16s. 8½d.		£14 0s. 5½d.		£14 13s. 3½d.	
Cost of Manure.		—		15s.		15s.	
Profit per acre from use of Manure.		—		£1 8s. 9½d.		£2 1s. 7½d.	

* The flax grown on each plot at each centre was valued separately.

of different Manures to the Flax Crop (1907).

4.		5.		6.		7.		REMARKS.
1½ cwt. Muriate of Potash, applied during Winter.		1½ cwt. Muriate of Potash, applied at time of sowing the Seed.		3 cwt. Kainit, 2½ cwt. Rape Meal, applied during Winter.		1½ cwt. Sulphate of Potash, applied at time of sowing the Seed.		
Retted Straw.	Scutched Flax.	Retted Straw.	Scutched Flax.	Retted Straw.	Scutched Flax.	Retted Straw.	Scutched Flax.	
lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	
3,190	450	3,560	510	3,550	510	3,740	570	
3,700	670	3,280	580	3,300	570	3,570	650	
3,750	630	3,960	730	3,740	660	3,130	630	
1,870	260	2,050	300	2,010	250	1,760	240	
2,520	520	2,210	430	2,910	590	2,030	420	
4,520	750	4,620	780	4,270	750	4,020	630	
3,258 lb.		3,280 lb.		3,302 lb.		3,042 lb.		
39 st. 1 lb.		39 st. 9 lb.		39 st. 9 lb.		37 st. 5 lb.		
16 79		16 92		16 81		17 19		
6s. 8d.		6s. 5d.		6s. 6½d.		6s. 5½d.		
£13 2s. 5d.		£12 16s. 9d.		£13 0s. 2d.		£12 6s. 0d.		
7s. 9d.		7s. 9d.		8s. 7d.		9s. 2d.		
£13 10s. 2d.		£13 4s. 6d.		£13 8s. 9d.		£12 15s. 2d.		
12s. 6d.		12s. 6d.		£1		16s. 6d.		
£1 1s. 0d.		£0 15s. 4d.		£0 12s. 1d.		£0 2s. 0d.		

These figures represent the averages of the valuations.

If the practice of applying kainit in the winter be now contrasted with that of putting on the manure at seed time (compare plots 2 and 3) it will be found that although the results are not quite uniform at the six centres, the average returns in respect of yields of straw and fibre and quality of fibre are in favour of late or spring application. There resulted, therefore, an increased profit over that produced by the winter application. In the experiments of the year under review this increase amounted to 12s. 10d. per statute acre. A result of like nature was observed in the 1905 and 1906 experiments. (See Table II.)

EFFECT OF MURIATE OF POTASH.

A.—*Winter Application.*

Scutched flax per statute acre from unmanured plot,	35 st.	12 lb.
Scutched flax per statute acre from muriate of potash plot (early application),	39 st.	1 lb.
Estimated profit per statute acre from use of muriate of potash applied in winter,		£1 1s. 0d.

On plot 4 the application of $1\frac{1}{4}$ cwt. muriate of potash per statute acre during the winter, previous to sowing the flax, gave, as compared with the unmanured plot, an increase of straw and scutched flax at five centres, but a decrease in straw and fibre at the remaining centre (Letterkenny). The net profit resulting from the early application of muriate of potash was £1 1s. 0d. per statute acre. This dressing did not therefore give such good returns in the 1907 experiments as did kainit.

B.—*Spring Application.*

Scutched flax per statute acre from unmanured plot,	35 st.	12 lb.
Scutched flax per statute acre from muriate of potash (spring application),	39 st.	9 lb.
Estimated profit per statute acre from use of muriate of potash applied in spring,		£0 15s. 4d.

Plot 5 also received a dressing of $1\frac{1}{4}$ cwt. muriate of potash, which, however, was not applied until immediately before the seed was sown. Compared with plot 1, this plot gave an increased yield of straw and fibre at four centres, the other two centres showing a decrease. On the average of the six centres the dressing yielded a profit of 15s. 4d. per statute acre,

As compared with plot 4, which received the same manure three or four months earlier, plot 5 produced a slightly increased average yield of scutched flax of, however, on the whole, a much poorer quality, so that the net returns are 5s. 8*d.* per acre lower than those from plot 4. In other words, in 1907, as in 1905, the spring application of muriate of potash proved less remunerative than its application in winter. In 1906 the reverse result was recorded.

EFFECT OF A MIXTURE OF KAINIT AND RAPE MEAL.

Scutched flax per statute acre from unmanured plot,	35 st.	12 lb.
Scutched flax per statute acre from kainit and rape meal (early application),	39 st.	9 lb.
Estimated profit per statute acre from use of kainit and rape meal applied in winter,	£0 12 <i>s.</i>	1 <i>d.</i>

To further test the effect of a potash manure supplemented by a slow-acting nitrogenous manure, a combination which gave good results both as regards yield and quality in the two previous years, plot 6 was again dressed with a mixture of 3 cwt. kainit and 2½ cwt. rape meal per statute acre. This mixture was again applied during winter. In 1907, however, the result of this dressing was not so striking, and although it gave an increase in both straw and scutched flax at five of the six centres the average profit over the unmanured plot is only 12*s.* 1*d.* per statute acre after allowing for the cost of the manure mixture. It is probable that the cold wet season of 1907 was not so favourable to the decomposition of the rape meal as was the case in the two previous years.

EFFECT OF SULPHATE OF POTASH.

Scutched flax per statute acre from unmanured plot,	35 st.	12 lb.
Scutched flax per statute acre from sulphate of potash plot (spring application),	37 st.	5 lb.
Estimated profit per statute acre from use of sul- phate of potash applied in spring,	£0 2 <i>s.</i>	0 <i>d.</i>

In 1906 plot 7 received sulphate of potash at the rate of 1¼ cwt. per statute acre. In 1907 this quantity was increased to 1½ cwt. so as to approximate more closely with the amount of potash contained in the dressings applied to the other potash

manure plots. The results from plot 7 at the different centres varied greatly. At two centres only did the yield of both straw and scutched flax exceed that of plot 1 (unmanured). At one centre the yield of straw was less and the yield of fibre greater; at another the yield of straw was greater and the yield of fibre the same, and at the two remaining centres the yield of both straw and fibre was less than on plot 1. In 1905 and 1906 the straw from plot 7 produced a higher percentage of fibre than that from any of the others, but in 1907 this result was not borne out, and the profit accruing from the application of sulphate of potash was only 2s. 0d. per statute acre.

GENERAL SUMMARY.

(1) From an examination of Table II. it will be seen that in the years 1901, 1902, 1903, 1905 and 1906 muriate of potash proved to be the most suitable form in which potash could be applied to the flax crop. In 1904 sulphate of potash gave better returns than either muriate of potash or kainit, while in 1907 kainit has proved the most profitable of the three. The results from sulphate of potash have been more irregular than those from the other potash manures. Flax growers may therefore be safely recommended to use muriate of potash. To facilitate the even distribution of a small quantity of this manure (1-1 $\frac{1}{4}$ cwt. per statute acre) it may be mixed with sand, fine soil, or sawdust, and its bulk so increased.

(2) The question as to whether it is better to apply the muriate of potash in winter or in spring is not definitely answered by the experiments as yet carried out. The winter dressing gave the better returns in 1905, and again in 1907, but in 1906 the spring-dressed plots proved the more profitable. As regards kainit, however, the spring application has given better returns than an earlier dressing for three years in succession. Farmers who still, for any reason, use kainit instead of muriate of potash for flax should therefore adhere to the customary practice of sowing the manure at seed time.

(3) The application of kainit and rape meal in 1907 did not give such good results as in the two previous years. This was probably due to the slower decomposition of the rape meal consequent upon the unfavourably cold and wet season in 1907.

II.—SEED TRIALS.

A.—*Variety Tests.*

(i.) GENERAL.

In 1907 these experiments comprised trials of the following varieties at each of six* centres:—

Dutch—(1) Riga Child, imported from Holland by the Department.

(2) A Belfast brand of Dutch seed.

Riga—(1) Pernau Crown, imported from Russia by the Department.

(2) A Belfast brand of Riga seed.

As in the case of the manurial tests the plots were one-tenth of a statute acre in extent. The seed was sown at the rate of 60 quarts, and each plot received a dressing of sulphate of potash at the rate of $1\frac{1}{2}$ cwt. per statute acre. The manure was applied immediately before seeding. The seeding and after treatment of the crop and produce was supervised as in former years by an officer of the Department, and the produce was again valued by a committee of buyers appointed by the Flax Spinners' Association. The seed was sown and the flax pulled on the dates mentioned on page 272 with regard to the manurial trials at the same centres.

Details in respect of each variety of seed as to the returns of straw and fibre from each centre, together with the average yield, value of fibre, and returns per statute acre from all six centres are shown in Table III., from which it will be observed (i) that the Riga Child produced more scutched flax than the Belfast Dutch at five centres and an equal quantity at the sixth, whilst the Pernau Crown seed imported by the Department gave a higher yield of fibre than the Belfast Riga at four centres; and that on the average, better returns in respect of scutched flax, relative yield of fibre, quality of flax, and, therefore, also in money returns, were obtained from both varieties of seed imported by the Department than from the two respective varieties of seed as sold by Belfast merchants; (ii) that the average returns from

* These trials were also conducted at four other centres, but the results were not recorded for the reasons mentioned in the preceding portion of this report.

the two varieties of seed imported by the Department are practically the same, whereas those from the Belfast Riga are higher than those from the Belfast Dutch seed in respect of yield of scutched flax at four of the six centres, and on the average of the six centres 16s. 2d. per statute acre better.

These results confirm those of previous tests in showing that the yield from either Riga or Dutch seed is independent of the character of the soil on which it is sown. For example, of the Belfast brands the Riga did better than the Dutch on heavy soils at Letterkenny and Lisooly (River Finn Co-operative Flax Society), and the only cases in which the Dutch gave better results were on the light and medium loams at Ballyhaise and Castlefinn. This is in direct opposition to the commonly accepted idea that Dutch seed is better suited to heavy soils and Riga to light soils. The quality of Dutch and Riga seed may vary from year to year in accordance with the crops from which the seed is obtained and with the conditions under which it is harvested in the respective countries. The results of the 1907 general variety trials further emphasise the importance of sowing good seed, as both the Dutch and Riga seed imported by the Department gave a considerably higher yield than two brands commonly sown in Ulster. Farmers should therefore submit samples of their flax seed to the Department's seed testing station, and procure a copy of the Department's leaflet, No. 29, Flax Seed, which is published each year before the sowing season.

(ii.) SPECIAL.

In 1906 a quantity of seed procured for experimental purposes from the more easterly districts of Russia yielded good returns, and in 1907 the Department therefore again took steps to test seed from Kostroma and Ouglitch against Pernau Crown. This trial was carried out at two centres on plots one-fifth statute acre in extent, which were all manured with muriate of potash at the rate of $1\frac{1}{2}$ cwt. per statute acre. As imported the Kostroma and Ouglitch seeds contain a large quantity of weed seeds and other impurities, and these were therefore sown at a rate corresponding to a standard seeding of Pernau Crown. All operations in connection with these tests were supervised by an officer of the Department as in the case of the manurial and general variety tests, and the produce similarly valued in Belfast. Full details

TABLE III.—Showing the Returns from Trials of Different Varieties of FLAX SEED (1907).

VARIETY OF SEED TESTED.	NO. OF PLOT.		1.		2.		3.		4.		REMARKS.	
	Centre.	Character of Soil.	Dutch. (Riga Child.)		Dutch. (Belfast Brand.)		Riga. (Bernau Crown)		Riga. (Belfast Brand.)			
			Retted Straw	Scutched Flax	Retted Straw	Scutched Flax	Retted Straw	Scutched Flax	Retted Straw	Scutched Flax		
Castlefinn Co-operative Flax Society.	Medium loam, gravelly sub-soil.	lb.	lb.	3,740	570	3,520	480	3,060	430	3,210	440	
Letterkenny Co-operative Flax Society.	Heavy loam, clay sub-soil.	3,570	650	3,470	630	3,410	600	3,340	650	3,340	650	
River Finn Co-operative Flax Society.	Deep heavy loam, clay sub-soil.	3,130	630	2,850	510	3,310	620	3,160	580	3,160	580	
Stranorlar Co-operative Flax Society.	Poaty soil, dark blue clay sub-soil.	1,760	240	1,570	200	1,910	280	1,750	240	1,750	240	
Wm. Kennedy, Cullinaghway.	Medium loam, clay sub-soil.	2,030	420	1,720	330	2,500	340	2,220	440	2,220	440	
Agricultural Station, Ballyheale.	Light loam, blue clay sub-soil.	4,160	670	3,870	670	3,870	670	3,870	670	3,440	570	
Average Yield of Retted Straw per statute acre.	...	3,065 lb.	2,833 lb.	3,112 lb.	2,903 lb.	3,112 lb.	2,903 lb.	3,112 lb.	2,903 lb.	3,112 lb.	2,903 lb.	
Average Yield of Scutched Flax per statute acre.	...	37 st. 12 lb.	33 st. 8 lb.	37 st. 12 lb.	34 st. 11 lb.	37 st. 12 lb.	34 st. 11 lb.	37 st. 12 lb.	34 st. 11 lb.	37 st. 12 lb.	34 st. 11 lb.	
Percentage of Scutched Flax from Retted Straw.	...	17.29	16.30	17.46	16.78	17.46	16.78	17.46	16.78	17.46	16.78	
Average Value of Scutched Flax per stone.*	...	6s. 6½d.	6s. 3½d.	6s. 6½d.	6s. 5½d.	6s. 6½d.	6s. 5½d.	6s. 6½d.	6s. 5½d.	6s. 6½d.	6s. 5½d.	
Average Returns from Scutched Flax per statute acre.	...	£12 12s. 9½d.	£10 15s. 1½d.	£12 12s. 3½d.	£11 11s. 1½d.	£12 12s. 3½d.	£11 11s. 1½d.	£12 12s. 3½d.	£11 11s. 1½d.	£12 12s. 3½d.	£11 11s. 1½d.	
Average Returns from Tows per statute acre.	...	8s. 4½d.	7s. 5½d.	7s. 6½d.	7s. 7½d.	7s. 6½d.	7s. 7½d.	7s. 6½d.	7s. 7½d.	7s. 6½d.	7s. 7½d.	
Average Returns from Flax and Tows per statute acre.	...	£13 0s. 4½d.	£11 2s. 6½d.	£12 19s. 9½d.	£11 18s. 8½d.	£12 19s. 9½d.	£11 18s. 8½d.	£12 19s. 9½d.	£11 18s. 8½d.	£12 19s. 9½d.	£11 18s. 8½d.	

* The flax grown on each plot at each centre was valued separately. These figures represent the average of the valuations.

of the results of these trials are given in Table IV., from which it will be seen that at one centre Pernau Crown gave a higher yield of scutched flax than either the Kostroma or Ouglitch seed, while at the second centre the Kostroma seed gave a higher yield than the Pernau Crown, which, in turn, produced better results than the Ouglitch. On the average in 1907 the Pernau Crown produced the highest monetary returns, whereas in the previous year Kostroma seed proved a more profitable variety than Pernau Crown.

B.—*Selection of Seed.*

Further experiments on flax seed selection were carried out in 1907 with seed saved in 1906 near Coleraine and Letterkenny. The experiment was conducted at three centres and comprised trials of seed saved from selected long flax plants of one crop near Coleraine and three crops near Letterkenny, and of that saved from plants taken indiscriminately from the same crops. A quantity of each of the two parcels of seed from Coleraine was sown at Aghadowey and Urney on one-tenth acre plots, and the six lots from the other district were sown on larger plots at Letterkenny. All the seed was saved from straw dried on the field, and was carefully cleaned. Although the standard of purity of the seeds sown was as high as that of the best samples of Dutch seed, the germination was, as a rule, low—often below 90 per cent.—and allowance was made for this factor by sowing them at a higher rate than is usual for good Dutch or Riga seed. The plots were manured at seed time with muriate of potash at the rate of $1\frac{1}{4}$ cwt. per statute acre. All operations connected with the crop were supervised by an officer of the Department, and the produce of each plot was valued in Belfast by representatives of the Spinners' Association.

The results of this experiment are given in Table V., from which it will be seen that in all five cases the seed from selected plants gave higher yields of straw and flax than that saved from the general crop. On the average, the yield of scutched flax produced by seed from selected plants was 30 st. 7 lb. per statute acre, and that from seed saved from the general crop, 25 st. 7 lb. The fibre of the crop grown from the seed from selected plants was of rather better quality than that from the other seed, and the total returns per statute acre wer £10 7s. 9d. and £8 10s. 4d., respectively. Though the balance is in favour of the seed from selected plants, the returns even from such seed are not relatively

high. In the two previous years a similar result was obtained, but in 1906 it was shown that seed imported from Russia yielded better monetary returns than that saved in Ulster from selected flax plants. In 1907 such a comparison was instituted at only one centre, *i.e.*, Aghadowey, where imported seed of the Pernau Crown variety was sown. The details and results of this test are shown in Table VI. It will be noticed that in that case the selected Irish saved seed gave better returns than the imported Pernau Crown.

Having regard, however, to the difficulty of saving seed under the climatic conditions prevailing in Ireland, the labour involved, the skill and attention required, and to the fact that the straw from which the seed is saved cannot usually be retted until the season following the one in which it was grown, the Department are not in a position, pending the results of further experiments, to recommend Irish flax growers to select and save their own seed.

TABLE IV. — SHOWING RESULTS OF TRIALS OF VARIOUS VARIETIES OF RUSSIAN FLAX SEED, 1907.

NO. OF PLOT.		1.		2.		3.	
VARIETY OF SEED.		Pernau Crown.		Kostroma.		Oughtich.	
Name and Address of Farmer.	Character of Soil.	Retted Straw.	Scutched Flax.	Retted Straw.	Scutched Flax.	Retted Straw.	Scutched Flax.
		lb.	lb.	lb.	lb.	lb.	lb.
Mrs. Macklin, Deerpark, Newtownstewart.	Medium loam; gravelly sub-soil.	3,830	730	3,730	585	3,475	575
W. Patrick, Magheracoolton, Newtownstewart.	do.	2,505	500	2,820	540	2,730	360
Average Yield of Retted Straw per Statute Acre.		3,198 lb.		3,275 lb.		3,103 lb.	
Average Yield of Scutched Flax per Statute Acre.		43 st. 13 lb.		40 st. 3 lb.		33 st. 6 lb.	
Percentage of Scutched Flax from Retted Straw.		19.23		17.19		15.08	
Average Value of Scutched Flax per stone.*		6s. 3d.		6s. 6½d.		6s. 3½d.	
Average Returns from Scutched Flax per Statute Acre.		£13 16s. 7d.		£13 5s. 3d.		£10 13s. 2d.	
Average Returns from Tow per Statute Acre.		9s. 5d.		8s. 9d.		10s. 5d.	
Average Returns from Scutched Flax and Tow per Statute Acre.		£14. 6s. 0d.		£13 14s. 0d.		£11 3s. 7d.	

* The flax grown on each plot at each centre was valued separately. These figures represent the average of the valuations.

TABLE V.—Showing Results of Seed Selection Trials.

NUMBER OF PLOT,		1.		2.	
VARIETY OF SEED.		Irish-saved Seed selected from long stalks.		Irish-saved Seed not selected.	
Name and Address of Farmer.	Character of Soil.	Retted Straw.	Scutched Flax.	Retted Straw.	Scutched Flax.
W. Kennedy, Caheney, Aghadowey,	Medium clay: clay subsoil.	1b. 2,870	1b. 500	1b. 1,890	1b. 370
Urney Co-operative Flax Society,	Medium loam: gravelly subsoil.	3,500	570	3,290	560
George A. Kelso, Tullygay, Letter-kenny (1).	Medium loam: gravelly subsoil.	2,433	396	1,917	303
George A. Kelso, Tullygay, Letter-kenny (2).	Medium loam: gravelly subsoil.	2,497	405	2,010	295
George A. Kelso, Tullygay, Letter-kenny (3).	Medium loam: gravelly subsoil.	1,916	266	1,834	255
Average Yield of Retted Straw per statute acre. ...		2,643 lb.		2,188 lb.	
Average Yield of Scutched Flax per statute acre. ...		30 st. 7 lb.		25 st. 7 lb.	
Percentage of Scutched Flax from Retted Straw. ...		16·16		16·32	
Average Value of Scutched Flax per stone.* ...		6s. 8d.		6s. 5½d.	
Average Returns from Scutched Flax per statute acre. ...		£10 2s. 5d.		£8 5s. 1d.	
Average Returns from Tows per statute acre. ...		5s. 4d.		5s. 3d.	
Total Average Returns from Flax and Tows per statute acre.		£10 7s. 9d.		£8 10s. 4d.	

* The flax grown on each plot at each centre was valued separately. These figures represent the averages of the valuations.

TABLE VI.—Showing Returns from IRISH-MADE SEED as compared with those from Pernau Crown Seed. Test carried out on farm of W. Kennedy, Caheney, Aghadowey.

VARIETY OF SEED.	Pernau Crown.	Irish-saved Seed, selected from long stalks.	Irish-saved Seed, not selected.
Yield of Retted Straw per statute acre.	2,590 lb.	2,870 lb.	1,890 lb.
Yield of Scutched Flax per statute acre.	38 st. 8 lb.	35 st. 10 lb.	26 st. 6 lb.
Percentage of Scutched Flax from Retted Straw.	20·85	17·42	19·58
Value of Scutched Flax per stone. ...	5s. 0½d.	5s. 7½d.	5s. 3d.
Returns from Scutched Flax per statute acre.	£9 12s. 10d.	£10 0s. 11d.	£6 18s. 9d.
Returns from Tows per statute acre. ...	2s. 9d.	2s. 6d.	1s. 8d.
Total Returns from Scutched Flax and Tows per statute acre.	£9 15s. 7d.	£10 3s. 5d.	£7 0s. 5d.

FIELD EXPERIMENTS, 1908.

I.—BARLEY.

The experiments in barley cultivation during the past season were in the main a repetition of those carried out in 1901-1907 inclusive. The object is to ascertain the most suitable variety to grow in the barley districts in Ireland, and the results are considered from two standpoints:—

- (a.) Yield and market value of the crops.
- (b.) Their merits for malting and brewing purposes.

The experiments in 1908 were conducted at one centre in each of the same seven counties as in 1907, and in addition a centre was included in Co. Kilkenny.

The results of the barley experiments carried out in 1901-1906, inclusive, indicate that Archer barley is a much more remunerative variety for general cultivation than any of the other varieties tested. The only variety approaching Archer in return per acre was Goldthorpe, but in fifty-one tests carried out in the six years, the average value per acre of this barley was 12*s.* per statute acre *less* than that of Archer.

Previous to 1906 inquiry in Denmark had revealed the fact that a barley called Prentice, originally imported from England, and apparently identical with Archer, had been exhaustively compared by the Danish Department of Agriculture with Goldthorpe and other varieties, and found to give the best yield. Large bulks of this variety had also been obtained in Denmark by yearly increasing the quantities produced as a result of the cultivation of a single ear. It was therefore decided to compare Prentice barley with our own strain of Archer in 1906. The result of that year's experiment was that Prentice came out decidedly the best, with a money value of 11*s.* 6*d.* per statute acre better than Archer, which was 9*s.* 5*d.* per statute acre better than Goldthorpe. Two causes for the superiority of Prentice have been suggested:—

- (a.) The effect of change of climate from Denmark to Ireland.
- (b.) The process of selection to which the barley had been subjected in Denmark, which resulted in an improvement in yield.

In 1904 the desirability of obtaining for the experimental plots a purer stock of Archer than the commercial supply was so forcibly demonstrated that steps were at once taken to obtain purer bulks of this and other varieties then under comparison. A large number of ears of Archer were selected from one of the experimental plots in Queen's County in the autumn of 1904, and bulks of grain from these increased yearly, until in 1907 there was a sufficient quantity in hand to sow the plots.

At the same time single ear cultures of Archer, Goldthorpe, and other desirable varieties were commenced in a nursery built for the purpose at Ballinacurra, County Cork.

The scheme of experiments of 1907 was formulated with the idea of, firstly, obtaining additional information regarding the relative values of Archer and Prentice, secondly, of arriving at some conclusion as to the extent of deterioration, if any, of the Danish seed grown in Ireland one year, and thirdly, the value of English Archer as compared with the three other strains.

As Prentice barley is botanically identical with Archer, for the purposes of this report it is called *Danish Archer*.

The seed of Irish Archer was portion of the bulk of produce of hand-selected Archer seed of 1904, the Danish Archer grown in Ireland one year was obtained from one of the Experimental Plots of 1906, English Archer from Essex and Danish Archer from Denmark.

The results of these experiments showed that the Danish Archer freshly imported and the same variety grown in Ireland one year were practically equal in value, and that they were respectively $5\frac{1}{2}$ and $4\frac{1}{2}$ stones per statute acre more prolific than Irish Archer, while English Archer fell $9\frac{1}{2}$ stones per acre below the latter in yield, and was of less value monetarily by 10s. 2d per acre.

In extenuation of this variety, however, it must be said that the seed was obtained from a commercial source and was found to be badly mixed. This fact may, to some extent, account for its lower productivity and somewhat inferior quality.

The outstanding result of the 1907 experiments was that the relative value of Irish Archer as compared with Danish Archer (freshly imported) was improved by 7 stones per acre. It must also be borne in mind that apart from the effects of any climatic influences the two lots of seed are not comparable in their origin or method of propagation, for whereas the Danish Archer is the produce of a single selected ear, the Irish Archer was raised from

a large number of ears selected by hand. If the first method of selection has anything in its favour, truly comparable results can only be obtained by testing bulks of seed raised by identical methods.

With this point in view the scheme of experiments in 1908 was drawn up to test Irish Archer seed grown originally from a single ear with Danish Archer freshly imported and Danish Archer grown in Ireland two years.

As there was also sufficient seed of single ear production of two varieties of Goldthorpe, these barleys were included in the scheme.

CHARACTER OF SEASON, 1908.

In many aspects the season of 1908 must unfortunately be regarded as similar to that of 1907. January and February were, on the whole, favourable months, but excepting for a short period in the early days of March, that month was extremely winterly, and very little sowing was possible. These conditions continued until about the 5th of April, when finer weather set in. The land was then in bad condition, and sowing in consequence, in addition to being late, could not be carried out satisfactorily. The opening days of May were inclement, but during the later part of the month and through the whole of June more genial conditions prevailed, and all corn crops made good progress. July and the early part of August were exceedingly hot, with, however, short interludes of rainy weather, which was now more than ordinarily welcome. Despite all the heat the ripening stages of corn crops were more prolonged than usual, but the promise of both yield and quality was exceedingly good. A great deal of corn was cut in August, but very little actually saved. September was a most disastrous month—rain storms being general over the whole country, while sea-bordering counties were also subjected to long spells of heavy fogs, accompanied with cold, but absolutely still weather. The only redeeming feature of this period was that the temperature for the greater portion of the time was low. Large quantities of barley were damaged during this excessively wet period, and it was not until an advanced date in October that the bulk of the corn was saved. Threshing was conducted under most trying circumstances, and the condition of the barley marketed was, in general, low. The quality, as previous forecasts had indicated, was good, and the yield may at least be said to be very satisfactory.

TABLE SHOWING THE YIELD AND VALUES FOR

FARM.	Date Sown all Plots.	IRISH ARCHER.				DANISH ARCHER. or Ireland, 1906 and 1907.			
		Date Reaped.	Yield per Statute Acre.	Value.		Date Reaped.	Yield per Statute Acre.	Value.	
				Per Barrel.	Per Acre.			Per Barrel.	Per Acre.
			Brls. st.	s. d.	£ s. d.		Brls. st.	s. d.	£ s. d.
1. R. Hawkins, Whitegate, Co. Cork.	Mar. 11th.	Aug. 17th.	11 9½	15 9	9 2 10	Aug. 17th.	11 0	16 0	8 16 0
Screenings,	—	—	0 4	10 0	0 2 6	—	0 4	10 0	0 2 6
Total,	—	—	11 13½	—	9 5 4	—	11 4	—	8 18 6
2. E. Dwyer, Lorrha, Co. Tipperary.	April 7th.	Sept. 7th.	6 7½	16 0	5 3 6	Sept. 7th.	5 11	15 9	4 9 7
Screenings,	—	—	1 4	10 0	0 12 6	—	0 11	10 0	0 6 11
Total,	—	—	7 11½	—	5 16 0	—	6 6	—	4 16 6
3. W. B. Nunn, Castle Bridge, Wexford.	Mar. 4th and 10th.	Aug. 21st & 22nd.	9 8	16 3	7 14 5	Aug. 21st & 22nd.	10 6½	16 3	8 9 1
Screenings,	—	—	0 6	10 0	0 3 9	—	0 4½	10 0	0 2 10
Total,	—	—	9 14	—	7 18 2	—	10 11	—	8 11 11
4. J. Kearney, Wilville, Carlingford, Co. Louth.	Mar. 21st.	Aug. 17th.	10 3½	16 0	8 3 6	Aug. 17th.	10 7½	15 0	7 17 0
Screenings,	—	—	0 2	10 0	0 1 3	—	0 2	10 0	0 1 3
Total,	—	—	10 5½	—	8 4 9	—	10 9½	—	7 18 3
5. E. Mulhall, New Inn, Monasteren,	Mar. 27th, and April 26th	Aug. 17th.	14 15	16 0	11 19 0	Aug. 17th.	13 2	16 3	10 13 3
Screenings,	—	—	0 15½	10 0	0 9 8	—	0 7	10 0	0 4 5
Total,	—	—	15 14½	—	12 8 8	—	13 9	—	10 17 8
6. Messrs. Brown and Crosthwait, Bagen- alstown, Co. Carlow.	Mar. 12th.	Aug. 17th.	11 1½	16 3	9 0 3	Aug. 17th.	12 11	16 3	10 6 2
Screenings,	—	—	2 3	10 0	1 1 11	—	0 7	10 0	0 4 5
Total,	—	—	13 4½	—	10 2 2	—	13 2	—	10 10 7
7. M. J. Minch, Athy, Co. Kildare.	April 6th.	Aug. 19th.	12 6	16 3	10 1 1	Aug. 19th.	13 6	16 3	10 17 4
Screenings,	—	—	0 6	10 0	0 3 9	—	0 10	10 0	0 6 3
Total,	—	—	12 12	—	10 4 10	—	14 0	—	11 3 7
8. P. Egan, Gravinge, Kil- kenny.	April 3rd.	Aug. 13th.	12 10	16 3	10 5 2	Aug. 13th.	12 8	16 0	10 0 0
Screenings,	—	—	1 8	10 0	0 15 0	—	1 5	10 0	0 13 2
Total,	—	—	14 2	—	11 0 2	—	13 13	—	10 13 2
Average,	—	—	11 16½	—	9 7 6	—	11 10½	—	9 3 9
Average, 1907,	—	—	12 14	—	9 7 0	—	13 0½	—	9 11 5
Average, 1906,	—	—	12 5½	—	8 13 10	—	13 1	—	9 5 4
Average, 1905,	—	—	14 0½	—	10 1 1	—	—	—	—
Average, 1904,	—	—	11 6	—	8 4 6	—	—	—	—
Average, 1903,	—	—	10 7	—	7 5 9	—	—	—	—
Average, 1902,	—	—	12 12½	—	9 7 11	—	—	—	—
Average, 1901,	—	—	11 14	—	8 15 3	—	—	—	—

NOTE I.—The Screenings have been valued

NOTE II.—Owing to the Irish Archer at Centre 6 becoming laid some time previous to harvest, the grain plot. This circumstance requires to be recorded, as its influence on the average yield of good corn, and

THE EXPERIMENTAL PLOTS, 1908.

DANISH ARCHER, ex Denmark, 1908.				GOLDTHORPE.				CARTER'S GOLDTHORPE, S. R.			
Date Reaped.	Yield per Statute Acre.	Value.		Date Reaped.	Yield per Statute Acre.	Value.		Date Reaped.	Yield per Statute Acre.	Value.	
		Per Barrel.	Per Acre.			Per Barrel.	Per Acre.			Per Barrel.	Per Acre.
	Brls. st.	s. d.	£ s. d.		Brls. st.	s. d.	£ s. d.		Brls. st.	s. d.	£ s. d.
Aug. 17th.	10 6	16 3	8 8 7	Aug. 10th.	10 14½	16 3	8 17 6	Aug. 10th.	10 12	16 3	8 14 8
—	0 2	10 0	0 1 3	—	0 4	10 0	0 2 6	—	0 3	10 0	0 1 11
—	10 8	—	8 0 10	—	11 2½	—	9 0 0	—	10 15	—	8 16 7
Sept. 7th.	6 2	15 9	4 16 6	Sept. 5th.	6 8½	15 9	5 15 2 10	Sept. 5th.	6 6½	15 9	5 0 11
—	0 10	10 0	0 6 3	—	1 0	10 0	0 10 0	—	0 13	10 0	0 8 2
—	6 12	—	5 2 9	—	7 8½	—	5 12 10	—	7 3½	—	5 9 1
Aug. 21st & 22nd.	10 2½	16 3	8 5 0	Aug. 21st & 22nd.	8 9	16 6	7 1 3	Aug. 21st & 22nd.	7 15½	16 0	6 6 7 6
—	0 5½	10 0	0 3 5	—	0 4	10 0	0 2 6	—	0 5	10 0	0 3 2
—	10 8	—	8 8 5	—	8 13	—	7 3 9	—	8 4½	—	6 10 8
Aug. 17th.	10 15	15 0	8 4 1	Aug. 17th.	9 7½	16 0	7 11 6	Aug. 17th.	8 15½	15 9	7 1 3
—	0 2	10 0	0 1 3	—	0 1½	10 0	0 6 11	—	0 1½	10 0	0 0 9
—	11 1	—	8 5 4	—	9 9	—	7 12 5	—	9 0½	—	7 2 0
Aug. 17th.	13 0½	16 3	10 11 9	Aug. 17th.	12 8	16 3	10 3 2	Aug. 17th.	12 10	16 3	10 5 2
—	0 12½	10 0	0 8 0	—	0 3½	10 0	0 2 2	—	0 6½	10 0	0 4 3
—	13 13½	—	10 19 9	—	12 11½	—	10 5 4	—	13 0½	—	10 9 5
Aug. 17th.	13 1	16 3	10 12 3	Aug. 13th.	13 0	16 6	10 14 6	Aug. 13th.	11 5½	16 3	9 4 4
—	0 5½	10 0	0 3 5	—	0 5	10 0	0 3 2	—	0 2	10 0	0 1 3
—	13 6½	—	10 15 8	—	13 5	—	10 17 8	—	11 7½	—	9 5 7
Aug. 19th.	13 0	16 3	10 11 3	Aug. 19th.	12 2	16 6	10 0 1	Aug. 19th.	11 12	16 3	9 10 11
—	1 0	10 0	0 10 0	—	1 0	10 0	0 10 0	—	1 5	10 0	0 13 2
—	14 0	—	11 1 3	—	13 2	—	10 10 1	—	13 1	—	10 4 1
Aug. 18th.	13 7	16 3	10 18 4	Aug. 18th.	11 9	16 3	9 7 11	Aug. 18th.	12 0	16 3	9 15 0
—	1 5	10 0	0 13 2	—	0 9	10 0	0 5 8	—	0 13	10 0	0 8 2
—	14 12	—	11 11 6	—	12 2	—	9 13 7	—	12 13	—	10 3 2
—	11 13½	—	9 6 10	—	11 0½	—	8 16 11	—	10 12	—	8 10 1
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	11 8½	—	8 4 5	—	—	—	—
—	—	—	—	—	12 13½	—	9 3 8	—	—	—	—
—	—	—	—	—	10 13	—	8 1 4	—	—	—	—
—	—	—	—	—	8 10	—	6 9 5	—	—	—	—
—	—	—	—	—	12 1	—	9 0 9	—	—	—	—
—	—	—	—	—	9 10½	—	7 1 11	—	—	—	—

throughout at 10s. per barrel.

of this variety was not well filled, and a high percentage of screenings was in consequence returned from this consequently the average value per statute acre for this variety, was unduly adverse.

The following Table shows at each centre the name of the experimenter, the character of the soil and subsoil, and its previous treatment:—

Name of Centre.	Experimenter.	Character of Soil and Subsoil.	Previous Treatment of Land.
1. Whitegate, Co. Cork	R. Hawkins, Whitegate.	Good brownstone loam. Subsoil—Gravel and shale. Geol. form.—Brownstone or old red sandstone.	1906, Oats. 1907, Mangels, with farmyard manure and artificials.
2. Lorrha, Co. Tipperary.	E. Dwyer, Lorrha.	Good strong loam. Subsoil — Gravelly clay. Geol. form. — Middle black carboniferous limestone.	1906, Roots, with farmyard manure. 1907, Barley.
3. Castle Bridge, Co. Wexford.	W. B. Nunn, Castle Bridge.	Sandy loam. Subsoil—Sand. Geol. form. — Cambrian.	1906, Barley. 1907, Roots, with farmyard manure and artificials.
4. Carlingford, Co. Louth.	J. Kearney, Wilville.	Good drift loam. Subsoil Gravel and yellow clay. Geol. form.—Carboniferous limestone.	1906, Oats. 1907, Roots, with farmyard manure and artificials.
5. Monasterevan, Queen's Co.	E. Mulhall, New Inn.	Good deep loam. Subsoil — Limestone gravel. Geol. form. — Carboniferous limestone.	1906, Oats. 1907, Potatoes and turnips, with farmyard manure.
6. Bagenalstown, Co. Carlow.	Brown and Crosthwait, Bagenalstown.	Light loam. Subsoil — Limestone gravel. Geol. form.—Carboniferous limestone.	1906, Oats. 1907, Roots, with farmyard manure.
7. Athy, Co. Kildare.	M. J. Minch, Rockfield.	Good limestone loam. Subsoil — Limestone gravel. Geol. form. Carboniferous limestone.	1906, Barley. 1907, Roots, with farmyard manure and artificials.
8. Kilkenny, Co. Kilkenny.	P. Egan, Grooline.	Good strong loam. Subsoil—Gravel and yellow clay. Geol. form.—Carboniferous limestone.	1906, Oats. 1907, Roots, with farmyard manure.

COMPARISON OF THE FIVE BARLEYS TESTED AT ALL CENTRES.

The average yield and money value per statute acre of Irish Archer, Danish Archer (grown in Ireland *two* years), Danish Archer (freshly imported), Goldthorpe, and Carter's Coldthorpe S.R. are shown in the following table.

For purposes of reference similar details of Irish Archer, Danish Archer freshly imported and the same variety grown in Ireland one year are also given.

VARIETY.	Average Yield of good Corn per Statute Acre.				Average Value of good Corn per Statute Acre.				Per-centage of Screenings.	Average Total Value with Screenings.							
	1907.		1908.		1907.		1908.			1907.		1908.					
	Brls.	Stns.	Brls.	Stns.	£	s.	d.	£	s.	d.	Per cent.	£	s.	d.	£	s.	d.
Irish Archer.	12	1	11	1½	8	19	0	8	18	9	73	9	7	0	9	7	6
Danish Archer (or Denmark, 1906).	12	5½	11	2½	9	4	4	8	18	7	44	9	11	5	9	3	9
Danish Archer, (freshly imported).	12	6½	11	4	9	4	9	9	1	0	49	9	11	11	9	6	10
Goldthorpe.	—	—	10	9½	—	8	12	4	—	—	42	—	—	—	8	16	11
Carter's Goldthorpe, S.R.	—	—	10	3½	—	8	5	0	—	—	47	—	—	—	8	10	1

A comparison of the above figures shows that Danish Archer grown in Ireland *two* years and Danish Archer freshly imported are practically equal in yield of good corn per acre, while Irish Archer has further enhanced its relative productivity and is now, on the average, only inferior to these lots of barley by one and two-and-a-half stones, respectively.

Irish Archer returned a high percentage of screenings (see footnote, pages 288 and 289), and in total value per statute acre *i.e.*, the value of good corn plus the value of screenings, it has produced a slightly higher value than either of its Archer competitors.

The enhanced value of Irish Archer is probably due to the process of selection to which it has been subjected and to the care which has been exercised in keeping the seed pure, a result which emphasises the necessity of obtaining and maintaining the purity of barley which is intended for seed purposes.

So far as the tests have up to the present been carried there is no evidence of any appreciable deterioration in the productivity of Danish Archer seed which has been grown in Ireland two years. It is, however, unwise to form any conclusions from the results of two years' trials only, and the subject will receive further attention and investigation in 1909.

Both varieties of Goldthorpe show a smaller yield and monetary return per statute acre than any of the Archer types, while in quality they are slightly superior.

The Department desire to express their indebtedness to Messrs. A. Guinness, Son and Co., Ltd., for a contribution towards the cost of the experiments, and for other valuable assistance in connection with these investigations.

II.—MEADOW HAY.

The experiments on the manuring of meadow hay in 1908 were similar to those of the seven preceding years, with the addition as in 1907 of an extra plot, on which the kainit was applied before the 30th November. The experiments were carried out at seventeen centres in the counties of Antrim, Carlow, Dublin, Kildare, Kilkenny, Leitrim, Londonderry, and Wexford.

The plan of the experiment, with full details as to centres, manures applied, yield per acre, and estimated profits, is given in the table on page 2.

The following table summarises the results obtained :—

Plot No.	Manures applied per statute acre.	Average Yield of Hay per statute acre.	Increase due to Manures.	Value of Increase at 2s. per cwt.		Cost of Manures.		Estimated Profit per statute acre.
		T. C. Q.	T. C. Q.	£	s. d.	£	s. d.	£ s. d.
1	No manure,	1 13 3	—	—	—	—	—	—
2	Ten tons of farmyard manure,	2 5 0	0 11 1	1 2 6	2 0 0	0 17 6	(Loss).	
3	One cwt. nitrate of soda,	2 0 0	0 6 1	0 12 6	0 12 6	—		
4	One cwt. nitrate of soda, 2 cwt. of superphosphate,	2 5 3	0 12 0	1 4 0	0 18 6	0 5 6		
5	One cwt. nitrate of soda, 2 cwt. superphosphate, 2 cwt. kainit,	2 8 0	0 14 1	1 8 6	1 4 0	0 4 6		
6	One cwt. nitrate of soda, 2 cwt. superphosphate, 2 cwt. kainit (kainit applied not later than November 30th),	2 8 3	0 15 0	1 10 0	1 4 0	0 6 0		

The hay crop of 1908 was much the same as that of 1907, and the results obtained agree very closely with those of that and the six preceding years in which the experiments were carried out. The figures in the above table show that on the average of all the centres the heaviest yield of hay was obtained from the plots to which was applied, at the rate of 5 cwts. per acre, a mixture containing each of the three important ingredients of manures, viz., nitrogen, phosphates, and potash. While this is true of the average results, it has to be noted that at four individual centres the highest yield was obtained on plots receiving either a dressing of 10 tons of farmyard manure or a mixture of 3 cwt. of nitrate of soda and superphosphate in the proportion of one to two.

MEADOW HAY EXPERIMENT:—MANURIAL TEST FOR ONE YEAR.

Table showing the Returns per Statute Acre from each Centre.

Name and Address of Farmer.	County.	Character of Soil.	No Manure.	Plot 1. 10 tons Favin yard Manure.	Plot 2. 1 cwt. Nitrate of Soda.	Plot 3. 1 cwt. Nitrate of Soda, 2 cwt. Super- phos- phate.	Plot 4. 1 cwt. Nitrate of Soda, 2 cwt. Super- phos- phate.	Plot 5. 1 cwt. Nitrate of Soda, 2 cwt. Super- phos- phate, 2 cwt. Kainit.	Plot 6. 1 cwt. Nitrate of Soda, 2 cwt. Super- phos- phate, 2 cwt. Kainit (applied not later than Nov. 30th).
				T. C. Q.	T. C. Q.	T. C. Q.	T. C. Q.	T. C. Q.	T. C. Q.
1. A. Lowther, Toberguill, Dunadry.	Antrim.	Medium loam.	1	0 0	1 7 2	1 12 2	1 12 2	1 7 2	1 10 0
2. D. Patterson, Bally- watt, Dervock.	"	do.	1	16 1 2	1 1 2	7 2	2 17 3	2 19 1	3 1 3
3. R. Gregg, Broughshane.	"	Clay loam.	1	2 2	1 14 2	1 9 1	1 11 2	1 19 1	2 1 1
4. J. Nolan, Myshall, Bagin- bstown.	Carlow.	Gravelly loam.	0	18 2	1 5 0	1 0 2	1 3 0	1 6 2	—
5. W. Doyle, Ardattin, Tullow.	"	Sandy loam.	1	4 2	1 15 1	1 9 3	1 16 0	2 3 3	—
6. M. Dowling, Glenerna- neen, Brittas.	Dublin.	Medium loam.	1	6 1	1 14 0	1 12 2	1 16 3	1 19 2	1 18 2
7. E. Brady, Mountain View, Garristown.	"	do.	2	2 2	2 4 0	2 7 2	2 8 1	2 8 0	—
8. J. Behan, Lughill, Mon- asterevan.	Kildare.	Strong loam.	2	3 3	3 0 0	2 10 2	3 2 1	3 4 2	3 6 3
9. F. Strahan, Moore, Bal- lintore.	"	Loam.	1	2 3	2 0 0	2 2 2	2 0 2	1 17 2	2 3 3
10. M. Quin, Avondale, Donadea.	"	Clay.	2	2 3	2 7 2	2 5 0	2 13 2	2 17 2	2 14 3
11. F. Duran, Rathangan.	"	Strong loam.	1	11 0	2 10 0	1 16 3	2 4 0	2 4 0	2 7 0
12. The Very Rev. Canon Barry, D.D., P.P., Ballyragget.	Kilkenny.	Sandy.	2	0 0	2 15 0	2 5 0	2 8 0	2 17 2	—
13. John Carey, Foxfield, Fenagh.	Leitrim.	Clayey loam.	2	3 0	2 9 2	2 10 0	2 11 0	2 18 2	—
14. P. McMorrow, Killarua.	"	do.	2	5 2	2 14 2	2 9 1	2 14 0	3 1 0	—
15. Sir F. W. Heygate, Bellarena.	Liderry.	Clay loam.	2	1 1	3 5 0	2 4 2	2 15 3	2 14 2	2 16 0
16. James Irwin, Dam- head, Coleraine.	"	do.	1	11 2	1 17 1	1 16 3	2 2 3	2 3 0	2 8 1
17. J. Black, Clondaw, Bnniscorthy.	Wexford.	do.	1	19 3	3 1 1	2 1 2	2 19 2	2 13 2	—
Average Yield per statute acre.	—	—	—	1 13 3	2 5 0	2 0 0	2 5 3	2 8 0	2 8 3
Increase due to Manures.	—	—	—	—	0 11 1	0 6 1	0 12 0	0 14 1	0 15 0
					£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Value of Increase: Hay at 2s. per cwt.	—	—	—	—	1 2 6	0 12 6	1 4 0	1 8 6	1 10 0
Cost of Manures.	—	—	—	—	2 0 0	0 12 6	0 18 6	1 4 0	1 4 0
Estimated profit per statute acre.	—	—	—	—	0 17 6	—	0 5 6	0 4 6	0 6 0
					(Loss.)				

The general result, therefore, indicates that the mixture applied on plots 5 and 6 may be relied on to give a substantial, and in most cases, a profitable increase in the crop.

On plot 4 the same mixture, but without the kainit, was applied, and in a few cases this was more profitable than the complete mixture. Such a result may be expected on land which is in good heart; but even then the increase in the hay crop does not fully represent the advantages derived from manures containing potash, as these are also seen in the aftergrass, where the growth of clovers and bottom grasses is stimulated by the use of such manures.

The following table shows briefly the results obtained during the past seven seasons :—

—		No Manure.	Ten tons of Farm- yard Manure.	One cwt. Nitrate of Soda, 2 cwt. Super- phosphate, 2 cwt. Kainit.	One cwt. Nitrate of Soda, 2 cwt. Super- phosphate.	One cwt. Nitrate of Soda.
		T. C. Q.	T. C. Q.	T. C. Q.	T. C. Q.	T. C. Q.
1901	{ Average yield per statute acre,	1 8 2	1 18 2	2 8 3	2 5 0	1 16 3
	{ Estimated profit per acre,	—	£ s. d. 0 15 0	£ s. d. 1 8 6	£ s. d. 0 19 3	£ s. d. 0 10 0
			(Loss)			
1902	{ Average yield per statute acre,	1 10 0	1 19 2	2 6 2	2 0 2	1 14 3
	{ Estimated profit per acre,	—	£ s. d. 0 14 4	£ s. d. 1 1 0	£ s. d. 0 11 0	£ s. d. 0 3 3
			(Loss)			
1903	{ Average yield per statute acre,	1 9 0	2 1 2	2 7 2	2 2 2	1 15 0
	{ Estimated profit per acre,	—	£ s. d. 0 8 9	£ s. d. 1 4 3	£ s. d. 0 16 9	£ s. d. 0 4 6
			(Loss)			
1904	{ Average yield per statute acre,	1 8 1	1 19 3	2 3 3	1 19 0	1 13 2
	{ Estimated profit per acre,	—	£ s. d. 0 11 3	£ s. d. 0 16 9	£ s. d. 0 9 9	£ s. d. 0 1 6
			(Loss)			
1905	{ Average yield per statute acre,	1 11 1	2 0 0	2 6 0	2 2 1	1 18 3
	{ Estimated profit per acre,	—	£ s. d. 0 18 0	£ s. d. 0 15 0	£ s. d. 0 10 6	£ s. d. 0 8 3
			(Loss)			
1906	{ Average yield per statute acre,	1 13 3	2 3 0	2 11 0	2 6 3	2 1 0
	{ Estimated profit per acre,	—	£ s. d. 1 1 6	£ s. d. 0 10 6	£ s. d. 0 7 6	£ s. d. 0 2 0
			(Loss)			
1907	{ Average yield per statute acre,	1 12 3	2 8 3	2 9 3	2 2 3	1 18 3
	{ Estimated profit per acre,	—	£ s. d. 0 8 0	£ s. d. 0 10 0	£ s. d. 0 1 6	£ s. d. 0 0 6
			(Loss)			(Loss)
1908	{ Average yield per statute acre,	1 13 3	2 5 0	2 8 0	2 5 3	2 0 0
	{ Estimated profit per acre,	—	£ s. d. 0 17 6	£ s. d. 0 4 6	£ s. d. 0 5 6	£ s. d. 0 0 0
			(Loss)			

The use of nitrate of soda alone is not to be recommended, unless under exceptional circumstances.

The 10 tons of farmyard manure applied on plot 2 gave on the average the satisfactory increase of $11\frac{1}{4}$ cwt. per acre, and, as mentioned above, in a few cases yielded the heaviest crop.

If the hay crop is charged with the full cost of the manure (4s. per ton), a loss of 17/6 per acre is incurred; but if, on the other hand, only half the cost is charged to the hay crop, a profit of 2/6 is obtained. In this connection it should be remembered that, as in the case of the results obtained from the application of a potash manure, the actual increase in the weight of hay does not fully represent the beneficial effects of an application of dung. The growth of bottom or pasture grasses and clovers is very favourably influenced by a dressing of farm-yard manure.

As in 1907, an extra plot was included in this season's trials, viz., plot 6, to which was applied the same mixtures as on plot 5, the kainit, however, being applied not later than the 30th November.

This test was carried out at 11 centres in 1907, and 10 centres in 1908. The following table shows briefly the average results obtained :—

Plot No.	Manures Applied per Statute Acre.	Average yield of Hay per Statute Acre.	Increase due to Manures.	Value of Increase at 2s. per cwt.	Cost of Manures	Estimated Profit per Statute Acre.
		T. C. Q.	T. C. Q.	£ s. d.	£ s. d.	£ s. d.
(1)	1907 :— No Manure,	1 13 1	—	—	—	—
(5)	1 cwt. Nitrate of Soda, 2 cwt. Superphosphate, 2 cwt. Kainit.	2 9 0	0 15 3	1 11 6	1 4 0	0 7 6
(6)	1 cwt. Nitrate of Soda, 2 cwt. Superphosphate, 2 cwt. Kainit (Kainit applied not later than 30th November).	2 8 2	0 15 1	1 10 6	1 4 0	0 6 6
	1908 :—					
(1)	No Manure,	1 13 3	—	—	—	—
(5)	1 cwt. Nitrate of Soda, 2 cwt. Superphosphate, 2 cwt. Kainit.	2 8 0	0 14 1	1 8 6	1 1 0	0 4 6
(6)	1 cwt. Nitrate of Soda, 2 cwt. Superphosphate, 2 cwt. Kainit (Kainit applied not later than 30th November).	2 8 3	0 14 3	1 10 0	1 4 0	0 6 0

From these results it will be seen that in 1907 no advantage was obtained from the early application of kainit, whilst in 1908 a slightly heavier yield was shown by the plot which received the early application of kainit; the increase, however, is not sufficient to warrant the general adoption of this method.

Owing to the high price of artificial manures during the past two years, the profits resulting from the use of the various manurial dressings are somewhat lower than those obtained in previous years. The table on page 2 shows that in each year the heaviest yield and the greatest profit have been obtained from the plot receiving the complete manurial dressing, and farmers may therefore be recommended to apply to their meadow lands the following mixture per statute acre :—1 cwt. nitrate of soda, 2 cwt. superphosphate, 2 cwt. kainit.

III.—POTATOES.

A.—MANURIAL TEST (Old Series.)

The experiments on the manuring of potatoes carried out in 1908 were similar to those of preceding years, except that in the last three years an additional Plot (No. 7) was included with the object of testing the effect of sulphate of potash in comparison with muriate of potash. Briefly stated, the object of these experiments is to indicate what use can be made of artificial manures by way of supplementing applications of farmyard manure to the potato crop.

In Table I. (pp. 302-5) will be found the complete results of the experiments conducted at forty-nine centres in Counties Antrim, Cavan, Cork, Donegal, Dublin, Fermanagh, Galway, Kerry, Kilkenny, Leitrim, Limerick, Londonderry Mayo, Monaghan, Queen's County, Roscommon, Sligo, Tipperary, Tyrone, Westmeath, Wexford, and Wicklow. In each county the experiments were under the direct supervision of the county agricultural instructor.

While the results obtained at individual centres will repay careful study, especially in view of the fact that the character of the soil and the variety of potato grown at each is given, yet, when drawing general conclusions, it will be safer to be guided in the main by the average results. For the sake of easy reference these are reproduced in the following table :—

Plot.	Manure applied per statute acre.	Average total yield of potatoes per statute acre.	Increase due to Manures.	Cost of Manures.	Estimated profit per statute acre.
1	No manure.	Tons. Cwt. 4 9	Tons. Cwt. — —	£ s. d. — — —	£ s. d. — — —
2	20 tons farmyard manure.	9 13	5 4	4 0 0	5 18 0
3	15 tons farmyard manure.	9 0	4 11	3 0 0	5 14 0
4	15 tons farmyard manure, 1 cwt. sulphate of ammonia.	9 19	5 10	3 15 0	6 15 0
5	15 tons farmyard manure, 1 cwt. sulphate of ammonia, 4 cwt. superphosphate.	10 14	6 5	4 7 0	7 11 0
6	15 tons farmyard manure, 1 cwt. sulphate of ammonia, 4 cwt. superphosphate, 1 cwt. muriate of potash.	11 14	7 5	4 17 0	9 0 0
7	15 tons farmyard manure, 1 cwt. sulphate of ammonia, 4 cwt. superphosphate, 1 cwt. sulphate of potash.	11 9	7 0	4 18 0	8 8 0

In calculating the profits obtained, the following prices have been assigned to the different manures :—Farmyard manure, 4s. per ton ;

sulphate of ammonia, £15 per ton; superphosphate, £3 per ton; muriate of potash, £10 per ton and sulphate of potash, £11 per ton. The figures in the above table are largely confirmatory of those obtained in previous years. Each application of manure, or mixture of manures, has produced a large increase in the crop. The artificial manures have yielded a considerable profit per acre; the amount does not differ very materially from that obtained in 1907, as the next table shows. The dressing of 15 tons of dung has produced a crop only 13 cwt. less than that obtained when a heavier dressing is used, while when the lighter dressing is supplemented by the addition of 1 cwt. sulphate of ammonia the difference between the two plots becomes 6 cwt. in favour of the lighter dressing.

These experiments fully justify the advice given in previous reports that, as a general rule, and especially where farmyard manure is limited in amount, farmers should apply the latter in more moderate quantities, and supplement it with suitable artificial manures. Now the question arises, What are the "suitable" artificial manures? An answer is furnished from the figures contained in the following table:—

Plot.	Manure applied per statute acre.	Total Yield of Potatoes per acre.	Increase over Yield from 15 tons Dung.	Cost of Manures in excess of 15 tons Dung.	Estimated Profit from use of artificials	Estimated Profit from use of same artificials in 1907.
		Tons. Cwt.	Tons. Cwt.	£ s. d.	£ s. d.	£ s. d.
3	15 tons farmyard manure.	9 0	—	—	—	—
4	15 tons farmyard manure, 1 cwt. sulphate of ammonia.	9 19	1 19	0 15 0	1 1 0	1 0 0
5	15 tons farmyard manure, 1 cwt. sulphate of ammonia, 4 cwt. superphosphate.	10 14	1 14	1 7 0	1 17 0	1 19 0
6	15 tons farmyard manure, 1 cwt. sulphate of ammonia, 4 cwt. superphosphate, 1 cwt. muriate of potash.	11 14	2 14	1 17 0	3 6 0	2 18 0
7	15 tons farmyard manure, 1 cwt. sulphate of ammonia, 4 cwt. superphosphate, 1 cwt. sulphate of potash.	11 9	2 9	1 18 0	2 14 0	2 14 0

These figures show that the most suitable mixture of artificial manures that can be used to supplement a moderate application of dung is one which is complete, or, in other words, one which contains nitrogen, phosphates, and potash.

B.—MANURIAL TEST (New Series).

The question as to what quantity of each ingredient the mixture should contain has been under consideration, and with the object of furnishing an answer to this question a new series of experiments was devised last year. The same three manures were applied to each plot in addition to a moderate dressing of dung, but the quantity of each ingredient was varied. These experiments were conducted at twenty-three centres in Counties Antrim, Armagh, Carlow, Cork, Fermanagh, Longford, Tipperary, Waterford, and Wicklow. The complete results of the new series of experiments are shown in Table II. (pp. 306-9).

It will be seen from this table that the average yield from the various plots is fairly consistent, the greatest difference between any two plots in the series being less than $1\frac{1}{2}$ tons per acre.

When the cost of manures is taken into consideration it would appear that a slight advantage is to be obtained by using the mixtures indicated on Plots 5, 6, and 7. It will be necessary, however, to have further trials carried out before expressing a definite opinion as to what is the best proportion in which to apply these ingredients. In the meantime farmers may safely be urged to continue to use the mixture which has been recommended in previous years, viz.:—1 cwt. Sulphate of Ammonia, 4 cwt. Superphosphate, 1 cwt. Muriate of Potash. This conclusion is very considerably strengthened when the results of last year's experiments are compared with those of similar experiments conducted during the six previous years as given in the following table:—

[TABLE

Manures applied per Statute Acre.	1901.		1902.		1903.		1904.		1905.		1906.		1907.		1908.	
	Total Yield of Potatoes from use per Acre.	Esti- mated Profit from use of Manures.	Total Yield of Potatoes from use per Acre.	Esti- mated Profit from use of Manures.	Total Yield of Potatoes from use per Acre.	Esti- mated Profit from use of Manures.	Total Yield of Potatoes from use per Acre.	Esti- mated Profit from use of Manures.	Total Yield of Potatoes from use per Acre.	Esti- mated Profit from use of Manures.	Total Yield of Potatoes from use per Acre.	Esti- mated Profit from use of Manures.	Total Yield of Potatoes from use per Acre.	Esti- mated Profit from use of Manures.	Total Yield of Potatoes from use per Acre.	Esti- mated Profit from use of Manures.
No Manure.	T. C. 4 4	£ s. d. — —	T. C. 4 7	£ s. d. — —	T. C. 3 1	£ s. d. — —	T. C. 3 12	£ s. d. — —	T. C. 4 13	£ s. d. — —	T. C. 3 12	£ s. d. — —	T. C. 3 12	£ s. d. — —	T. C. 4 9	£ s. d. — —
20 tons Farmyard Manure, . . .	10 13	8 11 0	8 18	4 16 0	8 2	5 14 0	8 14	5 19 0	10 3	6 13 0	7 19	4 2 0	8 11	5 8 0	9 13	5 18 0
15 tons Farmyard Manure, . . .	9 15	7 14 0	7 19	4 3 0	7 9	5 9 0	7 16	5 4 0	9 1	5 11 0	7 6	4 1 0	7 13	4 16 0	9 0	5 14 0
15 tons Farmyard Manure, 1 cwt. Sulphate of Am- monia, . . .	10 16	8 2 6	8 19	5 6 6	8 6	6 8 6	8 10	5 17 6	9 16	6 9 6	7 17	4 7 0	8 14	5 16 0	9 19	6 15 0
15 tons Farmyard Manure, 1 cwt. Sulphate of Am- monia, 1 cwt. Su- perphosphate, . . .	11 12	10 3 0	9 16	6 3 6	9 10	8 2 6	9 9	6 19 6	10 5	6 12 6	8 16	5 10 0	9 9	6 15 0	10 14	7 11 0
15 tons Farmyard Manure, 1 cwt. Sulphate of Am- monia, 4 cwt. Su- perphosphate, 1 cwt. Muriate of Potash, . . .	12 1	10 1 0	10 11	7 5 0	10 5	9 2 0	10 9	8 10 0	11 5	8 3 0	9 18	7 2 0	10 5	7 14 0	11 14	9 0 0
15 tons Farmyard Manure, 1 cwt. Sulphate of Am- monia, 4 cwt. Su- perphosphate, 1 cwt. Sulphate of Potash, . . .	—	—	—	—	—	—	—	—	—	—	9 13	6 11 0	10 3	7 10 0	11 9	8 8 0

C.—VARIETY TEST.

This experiment, designed to test the relative cropping capabilities of different varieties of potatoes, was conducted at forty-eight centres in Counties Antrim, Armagh, Carlow, Cavan, Clare, Donegal, Dublin, Galway, Kerry, Kildare, Leitrim, Limerick, Londonderry, Longford, Mayo, Meath, Queen's County, Roscommon, Sligo, Tipperary, Tyrone, Westmeath, and Wexford. The full returns of all the varieties grown at each centre are given in Table III., pp. 310-15, together with the average yield per statute acre, and that of the same varieties in similar experiments conducted in the seven previous years.

As all the varieties were not grown at each centre, an accurate comparison between them cannot be drawn from the average figures stated in the table. A reliable comparison is, however, obtained if the yields of varieties grown at the same centres are compared.

The following summary of the results comprised in Table III. is given for convenient reference:—

Variety of Potato.	No. of Tests.	Average Total Yield per Statute Acre.	
<i>(Main Crop Varieties.)</i>		Tons.	Cwt.
Scottish Triumph.	11	13	5
Dalmeny Beauty,	9	12	10
Up-to-Date,	42	12	8
Duchess of Cornwall,	42	12	2
Factor,	28	11	17
Northern Star,	24	11	5
Beauty of Bute,	31	10	5
Old Champion,	42	10	0
Irish Queen,	18	9	18
Langworthy,	30	9	16
Evergood,	17	9	15
Champion II.,	13	9	8
Black Skorries,	32	8	15
<i>(Mid-Season Varieties.)</i>			
British Queen,	47	10	11
Suttons Abundance,	26	10	6
Royal Kidney.	28	9	8

D.—SPROUTING SEED POTATOES.

Late Varieties.

During the past season these experiments were carried out in 18 counties at 67 centres. At each centre the tests were carried out under similar conditions as to soil, manuring, variety, and cultivation, the only difference being that the seed for one plot was sprouted (as explained in Leaflet No. 58), and the seed for the other plot was not.

TABLE showing RESULTS OF EXPERIMENTS carried out in 1908 at sixty-seven centres.

COUNTY.	No. of Experiments.	Average Yield per Statute Acre.								Average gain in yield due to Sprouting.			
		Sprouted Potatoes.			Unsprouted Potatoes.								
		Sale-able.	Small.	Total.	Sale-able.	Small.	Total.						
		T.	C.	CWTS.	T.	C.	T.	C.	CWTS.	T.	C.	T.	C.
Antrim,	17	12	19	29	14	8	10	9	27	11	16	2	12
Armagh,	5	11	10	33	13	3	10	1	41	12	5	0	18
Cork, E.,	2	16	7	48	18	15	12	14	43	14	17	3	18
Cork, W.,	1	12	0	24	13	4	9	14	11	10	5	2	19
Dublin,	2	—	—	—	15	2	—	—	—	14	0	1	2
Fermanagh,	3	8	15	38	10	13	7	15	34	9	9	1	4
Kerry,	2	9	16	41	11	17	8	6	25	9	11	2	6
Kilkenny,	4	8	14	50	11	4	7	17	36	9	15	1	9
King's County,	2	12	8	48	14	16	11	12	28	13	0	1	16
Leitrim,	1	5	7	24	6	11	3	3	22	4	5	2	6
Londonderry,	13	9	0	38	10	18	6	7	34	8	1	2	17
Mayo,	3	9	2	38	11	0	8	1	41	10	2	0	18
Meath,	1	—	—	—	7	11	—	—	—	5	0	2	11
Monaghan,	2	11	19	31	13	10	9	3	37	11	0	2	10
Tipperary, N.,	2	8	17	24	10	1	6	15	22	7	17	2	4
Tipperary, S.,	2	13	18	35	15	13	12	0	30	13	19	1	14
Waterford,	3	13	13	42	15	15	11	11	44	13	15	2	0
Wexford,	2	16	0	46	18	6	12	17	26	14	3	4	3

SUMMARY OF RESULTS OF Experiments on the Sprouting of Late Potatoes in 1903, 1904, 1905, 1906, 1907, and 1908.

		No. of Centres.	Yield per Statute Acre.				Average gain in yield due to Sprouting.
			Sprouted Seed.		Unsprouted Seed.		
			T.	C.	T.	C.	T. C.
1903,	.	12	11	1	9	8	1 13
1904,	.	34	11	6	8	13	2 13
1905,	.	91	12	17	10	16	2 1
1906,	.	67	11	9	9	2	2 7
1907,	.	67	10	6	8	6	2 0
1908,	.	67	13	0	10	15	2 5

POTATO EXPERIMENT.—

TABLE I.—SHOWING THE RETURNS PER

Name and Address of Farmer.	County.	Character of Soil.	Variety of Potato.
J. Morrison, Artimaconrueck, Bushmills, ..	Antrim, ..	Clay, ..	Up-to-date, ..
P. Lynch, Bessan, Ballyjamesduff, ..	Cavan, ..	Clay loam, ..	Old Champion, ..
C. Bannon, Rathcraven, Mounttugent, ..	Do., ..	Loam, ..	Do., ..
J. Treacey, Tarron Billa, Virginia, ..	Do., ..	Do., ..	Do., ..
M. Morton, Kilberherth, Freemount, ..	Cork E., ..	Strong gravelly loam, ..	Up-to-date, ..
J. W. Fahy, Kilcrea, Ovens, ..	Cork W., ..	Clay loam, ..	Old Champion, ..
M. Buckley, Ivy Lodge, Bishopstown, ..	Do., ..	Sandy loam, ..	Do., ..
D. Carolan, Glenfad, Strabane, ..	Donegal, ..	Rich loam, ..	Sutton's abundance, ..
W. McCormack, Cullinagh, Caridounagh, ..	Do., ..	Peaty, ..	Beauty of Bute, ..
P. Seagrave, Castleknock, ..	Dublin, ..	Loam, ..	Up-to-date, ..
M. and M. Burke, Jamestown House, Sandford, ..	Do., ..	Light loam, ..	Scottish triumph, ..
J. J. Lawlor, Irishtown House, Clondalkin, ..	Do., ..	Strong loam, ..	Twentieth century, ..
R. Maxwell, Ballyreagh, Tempo, ..	Fermanagh, ..	Light moory, ..	Up-to-date, ..
T. Donohoe, Lisheen, Ballinasloe, ..	Galway, ..	Clay loam, ..	Old Champion, ..
M. Leahy, Oheratrim, Loughrea, ..	Do., ..	Stiff clay, ..	British Queen, ..
J. Slattery, Oakpark, Tralee, ..	Kerry, ..	Heavy loam, ..	Scottish triumph, ..
M. O'Connell, Rathmorrel, Causeway, ..	Do., ..	Rich loam, ..	Beauty of Bute, ..
P. O'Sullivan, Dineena, Ardfer, ..	Do., ..	Do., ..	Scottish triumph, ..
P. F. Byrne, Garryduff House, Gowran, ..	Kilkenny, ..	Strong loam, ..	Black Skerry, ..
J. Dunphy, Ballyverneen, Glenmore, ..	Do., ..	Loam, ..	Champion, ..
M. Kilduff, Toomrud, Glencar, Manorhamilton, ..	Leitrim, ..	Clay, ..	Do., ..
P. Keany, Lisnagrough, Manorhamilton, ..	Do., ..	Light clay, ..	Do., ..
A. Moore, Cranny, Moneymore, ..	Londonderry, ..	Loam, ..	Black Skerry, ..
T. Regan, Cloonfane, Charlestown, ..	Mayo, ..	Clay loam, ..	Old Champion, ..
St. Joseph's Monastery, Tourmakeady, ..	Do., ..	Heavy clay, ..	Do., ..
M. Glynn, Manulla, ..	Do., ..	Rich loam, ..	Do., ..
J. Flannery, Derryvohy, Balla, ..	Do., ..	Moory loam, ..	Do., ..
J. Lamb, Dromore, Castleblayney, ..	Monaghan, ..	Loam, ..	Do., ..
H. M'Kenna, Aughaloghan, Glasslough, ..	Do., ..	Medium loam, ..	Cups, ..
T. Davidson, Timahoe, Maryborough, ..	Queen's Co., ..	Do., ..	Up-to-date, ..
J. A. Mulhall, Pass, Maryborough, ..	Do., ..	Reclaimed bog land, ..	British Queen, ..
Do., ..	Do., ..	Do., ..	Old Champion, ..
M. Mulleaghe, Cloonbard, Castlerca, ..	Roscommon, ..	Medium loam, ..	Do., ..
M. Regan, Cloonard, ..	Do., ..	Heavy loam, ..	Do., ..
P. M'intyre, Iettrim, Cloonacool, ..	Silgo, ..	Medium loam, ..	Up-to-date, ..
T. Sweeney, Lecanon, Dromore West, ..	Do., ..	Clay loam, ..	Old Champion, ..
J. Wolfe, Rockfort, Nenagh, ..	Tipperary (N.), ..	Loam, ..	Langworthy, ..
T. Hackett, Loughally, ..	Tipperary (S.), ..	Clay, ..	Old Champion, ..
W. M'Elroy, Moyroe, Killyman, Moy, ..	Tyrone, ..	Loam, ..	British Queen, ..
D. Williamson, Forthill Farm, Castlecaulfield, ..	Do., ..	Heavy clay, ..	Old Champion, ..
J. Handbode, Ballymacmorris, Kilbeggan, ..	Westmeath, ..	Medium loam, ..	British Queen, ..
P. Donnellan, Corals town, Killycan, ..	Do., ..	Light loam, ..	Champion, ..
M. Kelly, Garrenstackle, Bree, ..	Wexford, ..	Clay loam, ..	Beauty of Bute, ..
M. M'Donald, Milesbog, Camolin, ..	Do., ..	Shingly loam, ..	Do., ..
J. Kehoe, Clone, Monamolin, ..	Do., ..	Clay, ..	Up-to-date, ..
J. Bergin, Newbawn, Rathdrum, ..	Wicklow, ..	Light clay, ..	Champion, ..
T. Murphy, Croneyhorn, Carnew, ..	Do., ..	Medium clay, ..	Abundance, ..
T. Potter, Howardstown, Bruzee, ..	Limerick, ..	Medium loam, ..	Duchess of Cornwall, ..
M. Mulcair, Ballyadam, Ballingrave, ..	Do., ..	Light limestone loam, ..	Beauties, ..
Average yield per statute acre, .. .. .			.. .. .
Increase due to Manures, .. .. .			.. .. .
Value of Increase : Saleable Potatoes, 2s. per cwt. ; Small, 1s. * per cwt.			.. .. .
Cost of Manures, .. .. .			.. .. .
Estimated profit per statute acre, .. .. .			.. .. .

MANURIAL TEST (OLD SERIES.)

STATUTE ACRE FROM EACH CENTRE.

PLOT 1.			PLOT 2			PLOT 3.			PLOT 4		
No Manure.			20 tons Farmyard Manure.			15 tons Farmyard Manure.			15 tons Farmyard Manure 1 cwt. Sulphate of Ammonia.		
Saleable.	Small.	Total.	Saleable.	Small.	Total.	Saleable.	Small.	Total.	Saleable.	Small.	Total.
tons cwt.	cwt.	tons cwt.	tons cwt.	cwt.	tons cwt.	tons cwt.	cwt.	tons cwt.	tons cwt.	cwt.	tons cwt.
0 5	10	0 15	1 12	26	2 18	1 1	26	2 7	2 12	26	3 18
3 1	18	3 19	8 4	32	9 16	7 10	28	8 18	8 12	41	10 13
2 0	30	3 10	5 8	53	8 1	4 16	54	7 10	6 0	34	7 14
6 4	43	8 7	12 5	27	13 12	12 1	24	13 5	13 7	31	14 18
11 6	37	13 3	12 16	37	14 13	12 14	63	15 17	13 7	43	15 10
3 8	14	4 2	11 3	34	12 17	8 11	25	9 16	9 9	12	10 1
2 6	22	3 8	11 4	42	13 6	9 2	34	10 16	11 4	22	12 6
3 18	27	5 5	7 3	46	9 9	7 1	32	8 13	7 18	61	10 19
4 0	15	4 15	8 16	36	10 12	6 13	34	8 7	8 14	40	10 14
2 7	38	4 5	11 3	57	14 0	10 5	42	12 7	10 13	36	12 9
2 0	18	2 18	6 11	100	11 11	6 19	60	9 19	6 16	69	10 5
7 13	29	9 2	10 7	41	12 8	8 8	37	10 5	9 4	46	11 10
1 5	75	5 0	6 8	85	10 13	5 17	94	10 11	5 17	75	9 12
1 10	17	2 7	7 12	45	9 17	6 5	40	8 5	9 0	55	11 5
2 15	27	4 2	9 3	26	10 9	7 14	32	9 6	9 7	35	11 2
1 12	14	2 6	9 17	18	10 15	8 17	13	9 10	10 6	19	11 5
8 1	13	8 14	13 5	24	14 9	11 14	22	12 16	12 9	23	13 12
8 13	12	9 5	12 6	16	13 2	11 18	16	12 14	12 0	21	13 1
1 9	17	2 6	7 5	32	8 17	3 2	17	4 0	6 10	34	8 4
2 12	16	3 8	3 16	19	4 15	6 6	17	7 3	4 18	26	8 4
4 10	14	5 4	9 15	26	11 1	9 13	17	10 10	9 18	20	10 18
4 15	15	5 10	8 7	19	9 13	8 17	19	9 16	8 12	24	9 16
4 0	40	6 0	9 14	1	11 0	6 17	42	8 19	7 14	39	9 13
3 0	20	4 0	8 1	20	11 0	8 10	40	10 10	9 5	37	11 2
2 13	38	4 12	9 5	46	10 19	6 13	58	9 11	8 10	56	11 6
2 9	52	5 1	9 10	13	10 3	8 8	24	9 12	9 14	28	11 0
2 12	43	4 15	9 13	24	10 17	7 16	20	8 16	10 15	20	11 15
2 13	38	4 11	7 11	40	9 11	8 10	40	10 10	9 13	28	11 1
3 15	52	6 7	16 0	40	16 0	12 0	40	14 0	13 15	30	15 5
5 0	20	4 0	14 0	10	7 0	7 0	0	7 0	8 10	—	8 10
3 0	50	4 0	3 15	25	5 0	4 0	20	5 0	4 0	50	6 10
2 6	35	4 1	6 17	45	9 2	6 17	40	8 17	5 16	30	7 15
3 2	32	4 14	6 15	29	8 4	6 10	24	8 3	6 16	32	8 8
2 5	10	2 15	8 6	20	9 6	8 19	22	10 1	9 10	24	10 14
1 13	11	2 4	6 10	18	7 8	6 8	19	7 7	7 9	18	8 8
1 9	11	2 0	6 3	15	6 18	5 8	17	6 5	6 5	18	7 3
0 19	16	1 15	3 19	45	6 4	3 15	43	5 18	3 18	37	5 15
6 19	13	7 12	12 11	30	14 1	11 15	36	13 11	10 16	38	12 14
2 5	28	3 13	4 7	32	5 19	3 7	39	5 6	5 11	63	8 14
3 2	22	4 4	6 4	20	7 4	5 11	26	6 17	6 0	31	7 11
1 6	11	1 17	2 12	32	4 4	2 12	30	4 2	3 0	37	4 17
4 6	7	4 13	—	—	—	6 17	41	8 18	8 3	50	10 13
1 17	22	2 19	6 14	47	9 1	6 1	41	8 2	7 19	52	10 11
0 0	15	0 15	6 7	63	9 10	6 3	61	9 4	6 12	59	9 11
1 11	18	2 9	6 6	31	7 17	5 3	27	6 10	6 1	31	7 12
3 13	15	4 8	10 3	18	11 1	8 19	18	9 17	9 16	15	10 11
4 12	8	5 0	9 15	21	10 16	9 2	20	10 2	8 1	22	9 3
2 6	7	2 13	5 17	12	6 9	5 14	11	6 5	5 9	12	6 1
3 5	24	4 9	7 19	34	9 13	7 8	32	9 0	8 5	34	9 19
—	—	—	4 14	10	5 4	4 3	8	4 11	5 0	10	5 10
—	—	—	£ s. d.	9 18 0	—	£ s. d.	8 14 0	—	£ s. d.	10 10 0	—
—	—	—	4 0 0	—	—	3 0 0	—	—	3 15 0	—	—
—	—	—	5 18 0	—	—	5 14 0	—	—	6 15 0	—	—

[continued on pp. 304-305.]

POTATO EXPERIMENT.—

TABLE I.—SHOWING THE RETURNS PER

Name and Address of Farmer.	County.	Character of Soil.	Variety of Potato.
J. Morrison, Artimacormick, Bushmills, ..	Antrim, ..	Clay, ..	Up-to-date, ..
P. Lynch, Bessan, Ballyjamesduff, ..	Cavan, ..	Clay loam, ..	Old Champion, ..
C. Bannon, Rathcraven, Mountaugent, ..	Do., ..	Loam, ..	Do., ..
J. Treacey, Tarmon, Blis, Virginia, ..	Do., ..	Do., ..	Do., ..
M. Morton, Kilberher, Freemount, ..	Cork E., ..	Strong gravelly loam, ..	Up-to-date, ..
J. W. Fahy, Kilcrea, Owens, ..	Cork W., ..	Clay loam, ..	Old Champion, ..
M. Buckley, Ivy Lodge, Bishopstown, ..	Do., ..	Sandy loam, ..	Do., ..
D. Carolan, Glenfad, Strabane, ..	Donegal, ..	Rich loam, ..	Sutton's abundance, ..
W. M'Cormack, Culdass, Carndonagh, ..	Do., ..	Peaty, ..	Up-to-date, ..
P. Seagrave, Castleknock, ..	Dublin, ..	Loam, ..	Up-to-date, ..
M. and M. Burke, Jamestown House, Sandiford, ..	Do., ..	Light loam, ..	Scottish triumph, ..
J. J. Lawlor, Irishtown House, Clondalkin, ..	Do., ..	Strong loam, ..	Twentieth century, ..
R. Maxwell, Ballyreagh, Tempo, ..	Fermanagh, ..	Light moory, ..	Up-to-date, ..
T. Donohoe, Lisheen, Ballinasloe, ..	Galway, ..	Clay loam, ..	Old Champion, ..
M. Leahy, Caheratrim, Loughrea, ..	Do., ..	Stiff clay, ..	British Queen, ..
J. Slattery, Oakpark, Tralee, ..	Kerry, ..	Heavy loam, ..	Scottish triumph, ..
M. O'Connell, Rathmorrel, Causeway, ..	Do., ..	Rich loam, ..	Beauty of Bute, ..
P. O'Sullivan, Dineena, Ardfer, ..	Do., ..	Do., ..	Scottish triumph, ..
P. F. Byrne, Garryduff House, Gowran, ..	Kilkenny, ..	Strong loam, ..	Black Skerry, ..
J. Dunphy, Ballyverneen, Glenmore, ..	Do., ..	Loam, ..	Champion, ..
M. Kilduff, Toomrud, Glencar, Manorhamilton, ..	Leitrim, ..	Clay, ..	Do., ..
P. Keany, Lisinagrough, Manorhamilton, ..	Do., ..	Light clay, ..	Do., ..
A. Moore, Cranny, Moneymore, ..	Londonderry, ..	Loam, ..	Black Skerry, ..
T. Regan, Cloonfane, Charlestown, ..	Mayo, ..	Clay loam, ..	Old Champion, ..
St. Joseph's Monastery, Tourmakeady, ..	Do., ..	Heavy clay, ..	Do., ..
M. Glynn, Manulla, ..	Do., ..	Rich loam, ..	Do., ..
J. Flannery, Derryvohy, Balla, ..	Do., ..	Moory loam, ..	Do., ..
J. Lamb, Dromore, Castleblayney, ..	Monaghan, ..	Loam, ..	Do., ..
H. M'Kenna, Aughaloghau, Glasslough, ..	Do., ..	Medium loam, ..	Cups, ..
T. Davidson, Timaho Maryborough, ..	Queen's Co., ..	Do., ..	Up-to-date, ..
J. A. Mulhall, Pass, Maryborough, ..	Do., ..	Reclaimed bog land, ..	British Queen, ..
Do., ..	Do., ..	Do., ..	Old Champion, ..
M. Mulleag, Cloonbard, Castlereagh, ..	Roscommon, ..	Medium loam, ..	Do., ..
M. Regan, Cloonard, ..	Do., ..	Heavy loam, ..	Do., ..
P. M'Intyre, Leetrim, Cloonacool, ..	Sligo, ..	Medium loam, ..	Up-to-date, ..
T. Sweeney, Lecanon, Dromore West, ..	Do., ..	Clay loam, ..	Old Champion, ..
J. Wolfe, Rockfort, Nenagh, ..	Tipperary (N.), ..	Loam, ..	Langworthy, ..
T. Backett, Loughally, ..	Tipperary (S.), ..	Clay, ..	Old Champion, ..
W. M'Elroy, Moyroe, Killymar, Moy, ..	Tyrone, ..	Loam, ..	British Queen, ..
D. Williamson, Forthill Farm, Castlecaulfield, ..	Do., ..	Heavy clay, ..	Old Champion, ..
J. Handibode, Ballymacmorris, Kilbeggan, ..	Westmeath, ..	Medium loam, ..	British Queen, ..
P. Donnellan, Coraistown, Killycan, ..	Do., ..	Light loam, ..	Champion, ..
M. Kelly, Garrenstackle, Bree, ..	Wexford, ..	Clay loam, ..	Beauty of Bute, ..
M. M'Donald, Milesbogue, Camolin, ..	Do., ..	Shingly loam, ..	Do., ..
J. Kehoe, Clone, Monarrollin, ..	Do., ..	Clay, ..	Up-to-date, ..
J. Bergin, Newbawn, Rathdrum, ..	Wicklow, ..	Light clay, ..	Champion, ..
T. Murphy, Croneyhorn, Carnew, ..	Do., ..	Medium clay, ..	Abundance, ..
T. Potter, Howardsdown, Bruree, ..	Limerick, ..	Medium loam, ..	Duchess of Cornwall, ..
M. Mulcair, Ballyadam, Ballingrave, ..	Do., ..	Light limestone loam, ..	Beauties, ..
Average yield per statute acre,			
Increase due to Manures,			
Value of Increase : Saleable Potatoes, 2s. per cwt. ; Small, 1s. per cwt.			
Cost of Manures,			
Estimated profit per statute acre,			

MANURIAL TEST (OLD SERIES)—*continued.*

STATUTE ACRE FROM EACH CENTRE.

PLOT 6.			PLOT 6.			PLOT 7.		
15 tons Farmyard Manure. 1 cwt. Sulphate of Ammonia. 4 cwt. Superphosphate.			15 tons Farmyard Manure. 1 cwt. Sulphate of Ammonia. 4 cwt. Superphosphate. 1 cwt. Muriate of Potash (high grade).			15 tons Farmyard Manure. 1 cwt. Sulphate of Ammonia. 4 cwt. Superphosphate. 1 cwt. Sulphate of Potash (high grade).		
Saleable.	Small.	Total.	Saleable.	Small.	Total.	Saleable.	Small.	Total.
tons cwt.	cwt.	tons cwt.	tons cwt.	cwt.	tons cwt.	tons cwt.	cwt.	tons cwt.
4 9	37	6 6	4 15	39	6 14	4 15	42	6 17
10 1	22	11 3	11 8	37	13 5	10 18	31	12 9
6 18	52	9 10	7 14	56	10 10	7 13	54	10 7
14 1	25	15 6	15 1	18	15 19	14 4	21	15 5
13 17	51	16 8	14 11	57	17 8	12 17	63	16 0
11 7	22	12 9	12 0	29	13 9	11 8	26	12 14
10 16	46	13 2	13 3	34	14 17	12 0	25	13 5
8 13	47	11 0	9 13	43	11 16	8 16	30	10 6
9 11	37	11 8	9 12	42	11 14	10 13	39	12 12
10 14	46	13 0	11 19	50	14 0	13 0	53	15 13
7 9	85	11 14	7 7	110	12 17	7 15	84	11 19
8 14	36	10 10	9 3	38	11 1	8 5	41	10 6
7 1	67	10 8	8 4	62	11 6	8 2	58	11 0
12 10	60	15 10	13 5	53	15 18	12 18	60	15 18
10 15	32	12 7	11 3	40	13 3	10 17	44	13 1
10 14	20	11 14	10 18	14	11 12	11 9	18	12 7
13 5	31	14 16	14 7	30	15 17	14 17	56	17 13
12 6	16	13 2	13 1	12	13 13	12 17	13	13 10
6 5	36	8 1	7 10	41	9 1	8 13	31	10 4
4 11	31	6 2	5 16	32	7 8	6 3	40	8 3
9 12	25	10 17	10 12	20	11 12	10 12	22	11 14
9 7	21	10 8	10 13	20	11 13	9 0	27	10 7
9 3	26	10 9	9 6	29	10 15	9 0	23	10 3
7 14	35	9 9	9 1	44	11 5	9 6	52	11 18
11 11	34	13 0	11 11	38	13 9	9 5	38	11 3
8 18	56	11 14	10 8	43	12 11	11 0	47	13 7
9 16	26	11 2	9 19	28	11 7	10 9	30	11 19
10 5	9	10 14	12 14	18	13 12	10 5	38	12 3
8 15	41	10 16	9 8	24	10 12	10 13	28	12 1
15 10	40	17 10	13 10	40	17 10	16 10	35	18 5
9 0	—	9 0	10 0	—	10 0	8 0	—	8 0
5 0	60	8 0	5 0	80	9 0	5 0	80	9 0
7 3	45	9 8	7 15	52	10 7	8 0	52	10 12
8 8	27	9 15	10 6	38	12 4	10 0	39	11 19
11 4	26	12 10	10 14	23	11 17	10 13	23	11 16
7 13	20	8 13	8 17	23	10 0	8 13	22	9 15
6 12	16	7 8	7 18	12	8 10	7 1	9	7 10
4 3	41	15 4	4 12	47	6 19	4 7	39	6 6
11 16	32	13 8	12 8	36	14 4	12 2	43	14 5
5 18	52	8 10	9 3	53	11 16	8 3	60	11 3
5 2	44	17 6	5 9	40	7 9	5 15	44	7 19
5 12	46	7 17	6 7	45	8 12	6 7	60	9 7
9 6	55	12 1	11 5	45	13 10	9 11	57	12 8
8 12	58	11 10	8 18	53	11 11	9 15	52	12 7
7 3	57	10 0	8 2	55	10 17	7 5	56	10 1
6 10	81	8 1	7 4	22	8 6	6 18	22	8 0
10 17	15	10 11	11 14	13	12 7	10 3	5	10 8
8 15	27	10 2	11 12	27	12 10	11 5	25	12 10
6 2	12	6 14	6 3	13	6 16	5 17	15	6 12
8 16	36	10 14	9 17	37	11 14	9 11	38	11 9
5 13	12	6 5	6 12	13	7 5	6 6	14	7 0
£ s. d. 11 16 0			£ s. d. 13 17 0			£ s. d. 13 6 0		
4 7 0			4 17 0			4 18 0		
7 11 0			9 0 0			8 8 0		

POTATO EXPERIMENT.—

TABLE II.—SHOWING THE RETURNS PER

Name and Address of Farmer.	County.	Character of Soil.	Variety of Potato.
J. Gordon, Ballynashee, Ballyclare,	Antrim, ..	Light loam, ..	Windsor Castle, ..
J. McCluggage, Carnduff, Larne,	Do., ..	Medium loam, ..	Up-to-Date, ..
J. Mollwaine, Browndod, Doagh,	Do., ..	Do., ..	Windsor Castle ..
B. Soze, Home Farm, Lurgan,	Armagh, ..	Heavy loam, ..	British Queen, ..
J. Warden, Manooney, Lurgan,	Do., ..	Do., ..	Up-to-Date, ..
J. Mahony, Ballinagraue, Borris,	Carlow, ..	Light loam ..	Old Champion ..
T. Wilson, Quinagh, Carlow,	Do., ..	Clay loam, ..	Up-to-Date, ..
J. O'Donoghue, Liscabane, Millstreet, ..	Cork, E., ..	Reclaimed mountain, ..	Old Champion, ..
J. Supple, Ballymadog, Youghal,	Do., ..	Sandy loam, ..	Do., ..
P. Crean, Killumney, Ovens,	Cork, W., ..	Gravelly loam, ..	Do., ..
J. W. Fahey, Killea, Ovens,	Do., ..	Clay Loam, ..	Do., ..
W. Lowry, Tattymacall, Lisbellaw,	Fermanagh, ..	Light loam. ..	Do., ..
W. Noble, Drumeanny, Lisnaskea,	Do., ..	Medium loam, ..	Sugar Cane, ..
R. Elliott, Melview, Longford,	Longford, ..	Clay, ..	Champion, ..
J. Mullen, Drumeel, Moatfarrell,	Do., ..	Loam, ..	Do., ..
J. Cooney, Gurteen, Killashee,	Do., ..	Do., ..	Do., ..
J. Kenny, Fermoye, Lanesboro',	Do., ..	Do., ..	Do., ..
J. Wolfe, Rockfort, Nenagh,	Tipperary, N., ..	Do., ..	Langworthy, ..
D. Fox, Ballyboy, Clogheen,	Tipperary, S., ..	Do., ..	Old Champion, ..
M. Woods, Droumlin, Bansha,	Do., ..	Do., ..	Do., ..
J. Cunningham, Dromore, East Cappoquin, ..	Waterford, ..	Do., ..	Do., ..
F. Dwan, Touracurra, Ballymacarberry, ..	Do., ..	Do., ..	Do., ..
M. Keenan, Ashtown, Roundwood,	Wicklow, ..	Light clay, ..	Local, ..
Average Yield per statute acre,			
Value of Crop : Saleable Potatoes, 2s. per cwt. ; Small, 1s. per cwt.,			
Cost of Manures,			
Value of Crop after deducting Cost of Manures,			

MANURIAL TEST (NEW SERIES).

STATUTE ACRE FROM EACH CENTRE.

PLOT 1.			PLOT 2.			PLOT 3.			PLOT 4.		
15 tons Farmyard Manure. 1 cwt. Sulphate of Ammonia. 3 cwt. Superphosphate. 1 cwt. Muriate of Potash.			15 tons Farmyard Manure. 1 cwt. Sulphate of Ammonia. 4 cwt. Superphosphate. 1 cwt. Muriate of Potash.			15 tons Farmyard Manure. 1 cwt. Sulphate of Ammonia. 5 cwt. Superphosphate. 1 cwt. Muriate of Potash.			15 tons Farmyard Manure. 1½ cwt. Sulphate of Ammonia. 4 cwt. Superphosphate. 1 cwt. Muriate of Potash.		
Saleable.	Small.	Total.	Saleable.	Small.	Total.	Saleable.	Small.	Total.	Saleable.	Small.	Total.
tons cwt.	cwt.	tons cwt.	tons cwt.	cwt.	tons cwt.	tons cwt.	cwt.	tons cwt.	tons cwt.	cwt.	tons cwt.
15	2	34	16	16	14	13	30	16	3	15	12
12	1	21	13	2	15	14	5	15	19	14	3
10	11	24	11	15	12	4	29	13	13	11	5
8	3	31	9	14	9	13	40	11	13	10	0
14	17	34	16	11	17	0	32	18	12	17	15
6	4	80	10	4	6	8	76	10	4	6	8
7	8	54	10	2	8	0	45	10	5	7	4
5	7	26	6	13	7	9	24	8	13	7	1
6	3	81	10	4	6	19	68	10	7	6	5
12	9	31	14	0	13	1	22	14	3	11	4
12	0	22	13	2	11	13	31	13	4	12	11
6	5	53	8	18	5	19	48	8	7	7	6
9	16	42	11	18	10	1	35	11	16	9	18
6	0	16	6	16	6	19	20	7	19	6	0
9	15	39	11	14	9	0	39	10	10	9	4
10	5	68	13	13	8	15	60	12	15	8	15
3	8	78	7	6	3	19	72	7	11	5	0
6	3	8	6	11	7	8	9	7	17	7	9
7	13	36	9	9	7	19	33	9	18	9	15
9	15	32	11	7	10	6	33	11	19	12	1
8	0	74	11	14	8	2	48	10	10	9	0
9	7	48	11	15	9	15	54	12	9	10	11
12	0	20	13	0	11	0	26	12	6	9	19
9	1	41	11	2	9	13	39	11	12	9	14
£ s. d.			£ s. d.			£ s. d.			£ s. d.		
20	3	0	21	5	0	21	7	0	21	13	0
4	16	0	4	17	0	5	0	0	5	4	0
16	9	0	16	8	0	16	7	0	16	8	0

[Continued on pp. 308-309.]

POTATO EXPERIMENT.—

TABLE II.—SHOWING THE RETURNS PER

Name and Address of Farmer.	County.	Character of Soil.	Variety of Potato.
J. Gordon, Ballynashee, Ballyclare, ..	Antrim, ..	Light loam, ..	Windsor Castle, ..
J. McCluggage, Carnduff, Larne, ..	Do., ..	Medium loam, ..	Up-to-Date, ..
J. McIlwaine, Browndod, Dagh, ..	Do., ..	Do., ..	Windsor Castle ..
R. Soze, Home Farm, Lurgan, ..	Armagh, ..	Heavy loam, ..	British Queen, ..
J. Warden, Manooey, Lurgan, ..	Do., ..	Do., ..	Up-to-Date, ..
J. Mahony, Ballinagrane, Borris, ..	Carlow, ..	Light loam ..	Old Champion ..
T. Wilson, Quinagh, Carlow, ..	Do., ..	Clay loam, ..	Up-to-Date, ..
J. O'Donoghue, Lisabane, Millstreet, Co. Cork,	Cork, E., ..	Reclaimed mountain, ..	Old Champion, ..
J. Supple, Ballymadog, Youghal, ..	Do., ..	Sandy loam, ..	Do., ..
P. Crean, Killumney, Ovens, ..	Cork, W., ..	Gravelly loam, ..	Do., ..
J. W. Fahey, Kilcrea, Ovens, ..	Do., ..	Clay Loam, ..	Do., ..
W. Lowry, Tattymacall, Lisbellaw, ..	Fermanagh, ..	Light loam, ..	Do., ..
W. Noble, Drumeunmy, Lisnaska, ..	Do., ..	Medium loam, ..	Sugar Cane, ..
R. Elliott, Melview, Longford, ..	Longford, ..	Clay, ..	Champion, ..
J. Mullen, Drumeel, Mountfarrell, ..	Do., ..	Loam, ..	Do., ..
J. Cooney, Gurteen, Killashee, ..	Do., ..	Do., ..	Do., ..
J. Kenny, Fermoy, Lanesboro', ..	Do., ..	Do., ..	Do., ..
J. Wolfe, Rockfort, Venagh, ..	Tipperary, N., ..	Do., ..	Langworthy, ..
D. Fox, Ballyboy, Clogheen, ..	Tipperary, S., ..	Do., ..	Old Champion, ..
M. Woods, Brounline, Bansha, ..	Do., ..	Do., ..	Do., ..
J. Cunningham, Dromore, East Cappoquin, ..	Waterford, ..	Do., ..	Do., ..
F. Dwan, Touracurra, Ballymacarberry, ..	Do., ..	Do., ..	Do., ..
M. Keenan, Ashtown, Roundwood, ..	Wicklow, ..	Light clay, ..	Local, ..
Average Yield-per statute acre,			
Value of Crop : Saleable Potatoes, 2s. per cwt. ; Small, 1s. per cwt.,			
Cost of Manures,			
Value of Crop after deducting Cost of Manures,			

MANURIAL TEST (NEW SERIES)—*continued*

STATUTE ACRE FROM EACH CENTRE.

PLOT 5. 15 tons Farmyard Manure. 2 cwt. Sulphate of Ammonia. 4 cwt. Superphosphate. 1 cwt. Muriate of Potash.			PLOT 6. 15 tons Farmyard Manure. 1 cwt. Sulphate of Ammonia. 4 cwt. Superphosphate. 1½ cwt. Muriate of Potash.			PLOT 7. 15 tons Farmyard Manure. 1 cwt. Sulphate of Ammonia. 4 cwt. Superphosphate. 2 cwt. Muriate of Potash.		
Salable.	Small	Total.	Salable.	Small.	Total.	Salable	Small.	Total.
tons cwt.	cwt.	tons cwt.	tons cwt.	cwt.	tons cwt.	tons cwt.	cwt.	tons cwt.
13 8	25	14 13	14 8	20	15 8	15 2	25	16 7
16 10	16	17 6	14 3	11	14 14	14 19	5	15 4
12 10	24	14 3	12 0	20	13 9	12 10	24	14 3
10 0	40	12 0	8 15	40	10 15	9 7	37	11 4
19 7	26	20 13	10 0	25	20 5	21 11	22	22 13
6 13	110	12 3	6 11	83	10 11	6 10	78	10 8
8 4	39	10 3	—	—	—	6 10	39	8 18
10 2	12	10 14	10 2	19	11 2	10 6	20	11 6
8 9	110	13 19	8 10	94	13 4	7 1	100	12 1
12 0	30	13 10	13 13	37	15 10	12 8	33	14 1
13 4	38	15 2	12 0	32	13 12	9 13	38	11 11
5 12	55	8 7	5 16	55	8 11	6 12	57	9 9
8 13	35	10 8	7 1	35	8 16	8 4	46	10 10
6 3	24	7 7	5 19	21	7 0	6 6	23	7 9
9 13	33	11 6	9 0	30	10 10	10 4	32	11 16
8 8	91	12 19	8 3	86	12 9	7 10	100	12 10
5 5	65	8 10	5 3	66	8 9	5 0	60	8 0
7 4	6	7 10	8 1	6	8 7	9 3	6	9 9
12 3	52	14 15	10 6	39	12 5	11 16	45	14 1
12 10	46	14 16	12 4	31	13 15	13 7	38	15 5
8 5	48	10 13	8 14	35	10 9	8 17	47	11 4
11 18	45	14 3	9 17	50	12 7	10 5	51	12 16
11 10	31	13 1	12 11	31	14 2	11 10	31	13 1
10 7	43	12 10	10 2	40	12 2	10 5	41	12 6
£ s. d.			£ s. d.			£ s. d.		
22 17 0			22 4 0			22 11 0		
5 12 0			5 2 0			5 7 0		
17 5 0			17 2 0			17 4 0		

POTATO EXPERIMENT.—

TABLE III.—SHOWING THE RETURNS PER

Name and Address of Farmer.	County.	Character of Soil.	MAINCROP.		
			Langworthy.		
			Saleable.	Small.	Total.
			tons cwt.	cwt.	tons cwt.
J. Mooney, Drumadarragh, Doagh, ..	Antrim, ..	Medium loam, ..	—	—	—
J. M'Kinstry, Henryfield, Ballyclare, ..	Do., ..	Do., ..	—	—	—
A. Price, Craigalappin, Straid, Bushmills, ..	Do., ..	Peat, ..	—	—	—
W. Symington, Knockmona, ..	Armagh, ..	Medium loam, ..	—	—	—
J. Lennon, Cournellan, Borris, ..	Carlow, ..	Do., ..	—	—	—
J. M'Guinness, Cullion, Cootehill, ..	Cavan, ..	Stiff loam, ..	12 17	42	14 19
B. Lynch, Lisnabrana, House, Mountnugent, ..	Do., ..	Loam, ..	8 6	21	9 7
J. Lynch, Lislis, Mullagh, ..	Do., ..	Light loam, ..	3 17	19	4 16
J. K. Halpin, Newmarket-on-Fergus, ..	Clare, ..	Clay loam, ..	10 5	20	11 5
H. Blaney, Ballina, Rowsnackill, ..	Donegal, ..	Gravelly loam, ..	6 4	11	6 15
W. Doherty, Cashel, Gleneely, ..	Do., ..	Rich loam, ..	7 13	44	9 17
J. O'Neill, Kinsale, Hall, Malahide, ..	Dublin, ..	Loam, ..	10 11	9	11 0
C. Dodd, Castlemaute, Cloghran, ..	Do., ..	Do., ..	10 17	11	11 8
P. Tolan, Balbriggan, ..	Do., ..	Do., ..	9 11	20	10 11
K. Holland, Kinvara, ..	Galway, ..	Do., ..	9 2	33	10 15
P. Finerty, Currahaun, Woodlawn, ..	Do., ..	Gravelly loam, ..	8 5	27	9 12
J. Woulfe, Ballyounen, Lisselton, ..	Kerry, ..	Loam, ..	—	—	—
M. Daly, Duagh, Kilmorna, ..	Do., ..	Medium loam, ..	—	—	—
P. Maher, Kiltomy, Lixnaw, ..	Do., ..	Strong loam, ..	—	—	—
P. Behan, Allenwood, ..	Kildare, ..	Reclaimed bog, ..	—	—	—
J. Stanley, Blackhinch, Naas, ..	Do., ..	Moory, ..	—	—	—
J. L. M'Dermott, Cornacloy, Manorhamilton, ..	Leitrim, ..	Peaty loam, ..	11 5	22	12 7
M. Gaffney, Cloone, ..	Do., ..	Peaty, ..	9 1	18	9 19
J. Ritchie, Straldarron, Derry, ..	Londonderry, ..	Gravelly loam, ..	—	—	—
J. Garrahan, Edgeworthstown, ..	Longford, ..	Loam, ..	—	—	—
J. Smith, Ballinalee, ..	Do., ..	Do., ..	—	—	—
J. Moxham, Colehill, ..	Do., ..	Do., ..	—	—	—
J. M'Donnell, Prizon, Balla, ..	Mayo, ..	Light loam, ..	9 0	32	10 12
R. Nally, Caltra, Claremorris, ..	Do., ..	Loamy clay, ..	8 6	30	9 16
M. Walsh, Mayo Abbey, ..	Do., ..	Loam, ..	8 10	30	10 0
M. Drew, Donecarny, Drogheda, ..	Meath, ..	Light gravelly loam, ..	8 13	18	9 11
J. Callan, Killear, Lobinstown, ..	Do., ..	Heavy clay, ..	10 2	13	10 15
J. Douglas, Rathmolyon, ..	Do., ..	Light loam, ..	10 0	13	10 13
W. Rafter, Ballylusk, Ballyfin, ..	Queen's Co., ..	Medium loam, ..	—	—	—
T. Clanton, Dysart, Maryborough, ..	Do., ..	Strong loam, ..	—	—	—
M. Rushe, Tulsk, ..	Roscommon, ..	Heavy clay, ..	7 10	42	10 12
P. Brennan, Cashel, Tobercurry, ..	Sligo, ..	Light limestone, ..	9 17	21	10 18
W. Slush, Leafony, Kilglass, ..	Do., ..	Dark loam, ..	13 4	19	14 3
P. P. Moloney, Gurt drum, ..	Tipperary, S., ..	Loam, ..	—	—	—
J. Carew, Goldengarden, ..	Do., ..	Do., ..	—	—	—
A. Wilson, Deerpark, Newtownstewart, ..	Tyrone, ..	Medium loam, ..	7 16	30	9 6
J. Lyons, Riversdale, ..	Do., ..	Loam, ..	6 0	30	7 10
T. Kelly, Killican, ..	Westmeath, ..	Clay loam, ..	6 3	14	6 17
J. Brady, Mooretown, Fore, ..	Do., ..	Light loam, ..	7 19	11	8 10
W. Hanlon, Whitechurch, New Ross, ..	Wexford, ..	Do., ..	8 14	47	11 1
M. Lyons, Craanford, Gorey, ..	Do., ..	Clay loam, ..	8 1	45	10 6
M. Cregan, Ballinvoira, Ballingrane, ..	Limerick, ..	Light limestone loam, ..	3 4	10	3 14
J. Coghlan, Breskamore, Clarina, ..	Do., ..	Do., ..	4 7	69	7 16
Average yield per statute acre in 1908,			8 10	26	9 16
Do., Do., 1907,			5 10	31	7 1
Do., Do., 1906,			5 9	17	6 6
Do., Do., 1905,			10 4	18	11 12
Do., Do., 1904,			—	—	—
Do., Do., 1903,			—	—	—
Do., Do., 1902,			—	—	—
Do., Do., 1901,			—	—	—

VARIETY TEST.

STATUTE ACRE FROM EACH CENTRE.

MAIN CROP.

Black Skerries.			Champion II.			Old Champion.			Beauty of Bute.		
Saleable.	Small.	Total.	Saleable.	Small.	Total.	Saleable.	Small.	Total.	Saleable.	Small.	Total.
tons cwt.	cwt.	tons cwt.	tons cwt.	cwt.	tons cwt.	tons cwt.	cwt.	tons cwt.	tons cwt.	cwt.	tons cwt.
5 16	15	4 11				7 11	25	8 16	9 17	25	11 2
4 14	30	6 4				7 14	35	9 0	9 3	20	10 3
5 3	22	6 5				5 9	65	8 14	5 0	54	8 3
7 11	11	8 2									
6 14	17	7 11				6 2	37	7 19	7 7	34	9 1
10 16	52	13 8	8 7	71	11 18	10 18	77	14 15	11 19	103	17 2
8 19	39	10 18	9 13	36	11 0	7 6	34	9 4	7 5	54	9 10
5 15	28	7 3	6 11	27	7 18	8 1	33	9 14	5 1	16	5 17
9 14	25	10 19	12 10	15	13 5	10 5	30	11 15	8 7	27	9 14
5 19	11	6 10	5 0	16	5 16	7 10	21	8 11	8 0	14	9 3
4 4	19	5 3	6 12	28	8 0	5 5	40	7 5	7 17	37	9 14
10 6	25	11 11	9 7	22	10 9	10 0	31	11 11	10 18	33	12 11
8 12	24	9 16	7 7	22	8 9	9 0	32	10 12	9 3	30	10 13
						7 9	47	9 16	8 16	26	10 2
						7 19	73	11 12	9 2	37	10 19
						4 14	89	9 3	8 14	24	9 18
						3 5	16	4 1			
						4 14	33	6 7			
9 0	23	10 3				10 10	21	11 11			
8 0	27	9 7				8 5	20	9 5			
11 15	15	12 10				11 9	25	12 14			
7 15	55	10 10				11 1	74	11 1	13 4	65	16 9
9 8	56	12 4				3 8	70	12 18	8 0	63	11 3
6 6	37	8 2				7 16	16	8 12	8 2	37	9 19
8 18	29	10 7	8 18	29	10 7	9 10	44	11 18	8 6	67	11 13
7 10	26	8 16	7 0	28	8 8	9 16	35	11 11	7 10	40	9 10
7 0	25	8 5	8 15	29	10 4	10 0	30	11 10	8 0	35	9 15
9 16	17	10 13									
5 11	20	6 11									
						8 12	46	10 18			
						7 3	52	9 15			
						6 16	28	8 4			
						4 0	29	5 9			
						8 18	35	10 13	9 0	34	10 14
						10 14	30	12 4	9 16	24	11 0
9 4	28	10 12				11 9	37	13 6	11 5	34	13 0
9 3	25	10 8				12 19	30	14 9	9 11	32	11 5
7 3	34	8 17				9 11	62	12 13	10 16	20	11 16
5 12	30	7 2				9 0	35	10 15	9 0	17	10 6
4 19	15	5 14				4 10	28	5 18	5 16	14	6 10
5 2	45	7 7				4 8	74	8 2	5 10	40	7 10
						5 14	77	9 11			
						9 6	79	13 5			
3 18	10	4 8	5 0	11	5 11	6 8	7	6 15	5 0	13	5 13
5 7	64	8 11	7 0	64	10 4	5 10	57	8 7	3 6	68	6 14
7 7	28	8 15	7 17	31	9 8	7 18	42	10 0	8 8	37	10 5
5 16	31	7 7	6 11	34	8 5	6 10	47	8 17	5 19	44	8 3
5 8	30	6 18	6 16	19	7 14	5 18	38	7 16	6 19	30	8 9
7 0	29	8 9	9 9	21	10 10	8 6	46	10 12	9 11	35	11 6
5 17	20	6 17	7 10	25	8 15	7 2	32	8 14	7 7	34	9 1
7 11	19	8 10	7 10	21	8 17	7 10	30	9 0	9 4	31	10 15
6 6	39	7 16	7 10	21	8 11	6 8	45	8 13	8 17	32	10 9
8 12	27	9 19	9 4	23	10 7	10 15	43	12 18	10 2	31	11 13

(Continued on pp. 312-313.)

POTATO EXPERIMENT.—

TABLE III.—SHOWING THE RETURNS PER

Name and Address of Farmer.	County.	Character of Soil.	MAINCROP		
			Up-to-Date.		
			Saleable.	Small.	Total.
			tons cwt.	cwt.	tons cwt.
J. Mooney, Drumadarragh, Doagh.	Antrim.	Medium loam.	11 2	25	12 7
J. McKinstry, Henryfield, Ballyclare.	Do.	Do.	12 3	20	13 3
A. Price, Craigalappin, Strald, Bushmills.	Do.	Peat.	7 1	54	9 15
W. Symington, Knockmema.	Armagh.	Medium loam.	10 16	13	11 9
J. Lennon, Cournellan, Borris.	Carlow.	Do.	7 12	27	8 19
J. McGuinness, Cullion, Cootehill.	Cavan.	Stiff loam.	11 11	104	16 15
B. Lynch, Lisnabrana House, Mountnugent.	Do.	Loam.	—	—	—
J. Lynch, Lislin, Mullagh.	Do.	Light loam.	8 18	36	10 14
J. K. Halpin, Newmarket-on-Fergus.	Clare.	Clay loam.	12 15	23	13 18
H. Blaney, Ballina, Rosnakill.	Donegal.	Gravelly loam.	7 4	15	7 19
W. Doherty, Cashel, Gleneely.	Do.	Rich loam.	7 18	34	9 12
J. O'Neill, Kinsale Hall, Malahide.	Dublin.	Loam.	15 10	9	15 19
C. Dodd, Castlemeate, Cloghran.	Do.	Do.	11 16	55	14 11
P. Tolan, Balbriggan.	Do.	Do.	12 16	30	14 6
E. Holland, Kinvara.	Galway.	Do.	11 15	24	12 19
P. Finnerty, Currabaun, Woodlawn.	Do.	Gravelly loam.	12 12	36	14 8
J. Woulfe, Ballyouneen, Lisselton.	Kerry.	Loam.	11 10	36	13 5
M. Daly, Duagh, Kilmorra.	Do.	Medium loam.	9 4	53	11 17
P. Maher, Kiltomy, Lixnaw.	Do.	Strong loam.	10 18	45	13 3
P. Behan, Allenwood.	Kildare.	Reclaimed bog.	4 6	15	5 1
J. Stanley, Blackhinch, Naas.	Do.	Moory.	8 7	66	11 13
J. L. McDermott, Cornacloy, Manorhamilton.	Leitrim.	Peaty loam.	12 15	24	13 19
M. Gaffney, Cloone.	Do.	Peaty.	11 0	33	12 13
J. Ritchie, Stradarron, Derry.	Londonderry.	Gravelly loam.	18 5	19	19 4
J. Garrahan, Edgeworthstown.	Longford.	Loam.	7 16	110	13 6
J. Smith, Ballinaloe.	Do.	Do.	8 7	88	12 15
J. Moxham, Colehill.	Do.	Do.	9 8	19	10 7
J. McDonnell, Prison, Balla.	Mayo.	Light loam.	11 2	54	13 16
R. Nally, Caltra, Claremorris.	Do.	Loamy clay.	8 6	42	10 8
M. Walsh, Mayo Abbey.	Do.	Loam.	11 6	40	13 6
M. Drew, Donecarney, Drogheda.	Meath.	Light gravelly loam.	—	—	—
J. Callan, Killear, Lobinstown.	Do.	Heavy clay.	—	—	—
J. Douglas, Rathmolyon.	Do.	Light loam.	—	—	—
W. Rafter, Ballylusk, Ballyfin.	Queen's Co.	Medium loam.	11 9	26	12 15
T. Clanton, Dysart, Maryborough.	Do.	Strong loam.	6 12	11	7 3
M. Rushe, Tulsk.	Roscommon.	Heavy clay.	10 1	51	12 12
P. Brennan, Cashel, Tobercurry.	Sligo.	Light limestone.	9 16	23	10 19
W. Slush, Leafony, Kilglass.	Do.	Dark loam.	13 13	31	15 4
P. P. Moloney, Gurt drum.	Tipperary, S.	Loam.	11 17	48	14 0
J. Carew, Goldengarden.	Do.	Do.	10 14	39	12 13
A. Wilson, Deerpark, Newtownstewart.	Tyrone.	Medium loam.	13 3	31	14 14
J. Lyons, Riversdale.	Do.	Loam.	12 14	35	14 9
T. Reilly, Killucan.	Westmeath.	Clay loam.	6 5	18	7 3
J. Brady, Mooretown, Fore.	Do.	Light loam.	7 19	24	9 3
W. Hanlon, Whitechurch, New Ross.	Wexford.	Do.	12 6	37	14 3
M. Lyons, Craanford, Gorey.	Do.	Clay loam.	11 16	71	15 7
M. Cregan, Ballinvoira, Ballingrane.	Limerick.	Light limestone loam.	—	—	—
J. Coghlan, Broskamore, Clarina.	Do.	Do.	—	—	—
Average yield per statute acre in 1908.			10 10	38	12 8
Do.	Do.	1907.	7 12	33	8 5
Do.	Do.	1906.	7 12	26	8 18
Do.	Do.	1905.	11 18	35	13 13
Do.	Do.	1904.	8 12	26	9 18
Do.	Do.	1903.	10 10	19	11 9
Do.	Do.	1902.	8 14	24	9 18
Do.	Do.	1901.	13 16	23	14 18

VARIETY TEST—continued.

STATUTE ACRE FROM EACH CENTRE.

MAINCROP.

Evergood.			Duchess of Cornwall.			Irish Queen.			Scottish Triumph.		
Saleable.	Small.	Total.	Saleable.	Small.	Total.	Saleable.	Small.	Total.	Saleable.	Small.	Total.
tons cwt.	cwt.	tons cwt.	tons cwt.	cwt.	tons cwt.	tons cwt.	cwt.	tons cwt.	tons cwt.	cwt.	tons cwt.
—	—	—	14 8	40	16 8	13 2	10	13 12	—	—	—
—	—	—	11 18	9	12 7	7 10	9	8 8	—	—	—
—	—	—	7 18	60	10 18	6 13	22	7 15	—	—	—
7 15	11	8 6	11 12	13	12 5	8 11	13	9 4	—	—	—
—	—	—	7 10	20	8 19	8 3	13	8 16	6 3	37	8 40
8 11	125	14 16	12 4	71	15 15	10 10	72	14 2	—	—	—
7 0	45	9 5	—	—	—	8 2	14	8 16	—	—	—
4 2	29	5 11	—	—	—	—	—	—	—	—	—
7 14	31	9 5	—	—	—	—	—	—	—	—	—
7 0	17	7 17	7 16	20	8 16	—	—	—	—	—	—
7 1	29	8 10	8 8	40	10 8	—	—	—	—	—	—
—	—	—	14 12	8	15 0	12 3	8	12 11	14 15	18	15 13
—	—	—	11 8	70	14 18	11 16	14	12 10	11 4	77	15 1
—	—	—	13 0	36	14 16	9 4	52	11 16	13 6	47	15 13
0 3	24	10 7	11 5	27	12 12	—	—	—	—	—	—
8 17	25	10 2	11 3	52	12 15	—	—	—	—	—	—
7 18	27	9 5	12 3	33	13 18	—	—	—	—	—	—
9 2	84	13 6	7 6	55	10 1	—	—	—	—	—	—
5 8	51	7 19	9 7	37	11 4	—	—	—	—	—	—
—	—	—	5 0	18	5 18	—	—	—	—	—	—
—	—	—	7 6	66	10 12	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	15 15	14	16 0	10 5	20	11 5	16 15	15	17 10
—	—	—	8 16	70	12 6	—	—	—	13 4	68	16 12
—	—	—	8 14	70	12 4	—	—	—	—	—	—
—	—	—	10 0	37	11 17	—	—	—	7 10	19	8 9
12 5	48	14 13	13 15	38	15 13	—	—	—	—	—	—
9 0	34	10 14	9 18	34	11 12	—	—	—	—	—	—
12 0	35	13 15	11 5	32	12 17	—	—	—	—	—	—
—	—	—	11 14	14	12 8	—	—	—	11 5	12	11 17
—	—	—	11 15	23	12 18	—	—	—	11 15	20	12 15
—	—	—	—	—	—	—	—	—	9 16	78	13 14
—	—	—	7 14	12	8 6	—	—	—	12 16	30	14 6
—	—	—	7 8	21	8 9	—	—	—	7 17	18	8 15
—	—	—	5 3	39	7 2	10 4	37	12 1	—	—	—
—	—	—	7 17	35	9 12	—	—	—	9 10	28	10 18
—	—	—	13 17	32	15 9	—	—	—	15 2	28	16 10
—	—	—	14 13	26	15 19	—	—	—	—	—	—
—	—	—	12 7	35	14 2	—	—	—	—	—	—
—	—	—	11 3	49	13 12	8 9	15	9 4	—	—	—
—	—	—	11 5	40	13 5	9 6	20	10 6	—	—	—
4 17	14	5 11	7 13	12	8 5	5 7	12	5 19	—	—	—
5 19	24	7 3	6 10	34	8 4	5 5	39	7 4	—	—	—
—	—	—	11 14	45	13 19	—	—	—	—	—	—
—	—	—	12 8	81	16 9	—	—	—	—	—	—
—	—	—	9 3	10	9 13	5 12	—	5 12	—	—	—
—	—	—	7 0	68	10 8	7 14	38	9 10	—	—	—
7 17	38	9 16	10 5	37	12 2	8 16	22	9 18	11 10	35	13 5
6 8	36	8 4	7 8	35	9 3	—	—	—	—	—	—
6 1	26	7 7	8 9	29	9 18	—	—	—	—	—	—
10 1	33	11 14	12 14	29	14 3	—	—	—	—	—	—
7 10	25	8 15	—	—	—	—	—	—	—	—	—
9 6	32	10 18	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—

(Continued on pp. 314-315.)

POTATO EXPERIMENT.

TABLE III.—SHOWING THE RETURNS PER

			MAINCROP.		
Name and Address of Farmer.	County.	Character of Soil.	Dalmeny Beauty.		
			Saleable.	Small.	Total.
			tons cwt.	cwt.	tons cwt.
J. Mooney, Drumadarragh, Doagh.	Antrim.	Medium loam.	—	—	—
J. McKinsty, Henryfield, Ballyclare.	Do.	Do.	—	—	—
A. Price, Craigalappin, Strald, Brashmill.	Do.	Peat.	—	—	—
W. Fymlington, Knockmena.	Armagh.	Medium loam.	—	—	—
J. Lennon, Courneilan, Borris.	Carlow.	Do.	—	—	—
J. McGuinness, Cullion, Cootchill.	Cavan.	Stiff loam.	—	—	—
B. Lynch, Lisabrana House, Mountingent.	Do.	Loam.	—	—	—
J. Lynch, Lislin, Mullagh.	Do.	Light loam.	—	—	—
J. K. Halpin, Newmarket-on-Fergus.	Clare.	Light loam.	—	—	—
H. Blaney, Ballina, Rosnakill.	Donegal.	Gravelly loam.	—	—	—
W. Donerty, Cashel, Gleneely.	Do.	Rich loam.	—	—	—
J. O'Neill, Kinsale Hall, Malahide.	Dublin.	Loam.	14 8	10	14 18
C. Dodd, Castlemaate, Cloghran.	Do.	Do.	12 2	25	13 7
P. Tolan, Balbriggan.	Do.	Do.	11 18	57	14 15
E. Holland, Kinvara.	Galway.	Do.	—	—	—
P. Finnerty, Currabaun, Woodlawn.	Do.	Gravelly loam.	—	—	—
J. Woulfe, Ballyouneen, Liselton.	Kerry.	Loam.	—	—	—
M. Daly, Duagh, Kilmorna.	Do.	Medium loam.	—	—	—
P. Maher, Kiltomy, Lisnaw.	Do.	Strong loam.	—	—	—
P. Behan, Allenwood.	Kildare.	Reclaimed bog.	—	—	—
J. Stanley, Blackhinch, Naas.	Do.	Moory.	—	—	—
J. L. McDermott, Cornacloy, Manorhanilton.	Lantrim.	Peaty loam.	—	—	—
M. Gaffney, Cloone.	Do.	Peaty.	—	—	—
J. Ritchie, Stradarron.	Londonderry.	Gravelly loam.	—	—	—
J. Garrahan, Edgeworthstown.	Longford.	Loam.	—	—	—
J. Smith, Ballinalee.	Do.	Do.	—	—	—
J. Moxham, Colehill.	Do.	Do.	—	—	—
J. McDonnell, Frizon, Balla.	Mayo.	Light loam.	—	—	—
B. Nally, Cibra, Claremorris.	Do.	Loamy clay.	—	—	—
M. Walsh, Mayo Abbey.	Do.	Loam.	—	—	—
M. Drew, Donecarney, Drogheda.	Meath.	Light gravelly loam.	13 2	12	13 14
J. Callan, Killear, Lobinstown.	Do.	Heavy clay.	10 12	20	11 12
J. Douglas, Bathmoyon.	Do.	Light loam.	10 6	56	13 2
W. Bafter, Ballylusk, Ballyfin.	Queen's Co.	Medium loam.	9 10	21	10 11
T. Clantou, Dywart, Maryborough.	Do.	Strong loam.	8 9	16	9 5
M. Bushe, Tusk.	Roscommon.	Heavy clay.	8 6	59	11 5
P. Brennan, Cashel, Tobercurry.	Sligo.	Light limestone.	—	—	—
W. Slush, Leafony, Kilglass.	Do.	Dark loam.	—	—	—
P. P. Moloney, Gurtbrum.	Tipperary, S.	Loam.	—	—	—
J. Carew, Goldengarden.	Do.	Do.	—	—	—
A. Wilson, Deerpark, Newtownstewart.	Tyrone.	Medium loam.	—	—	—
J. Lyons, Riversdale.	Do.	Loam.	—	—	—
T. Kelly, Killican.	Westmeath.	Clay loam.	—	—	—
J. Brady, Mooretown, Fore.	Do.	Light loam.	—	—	—
W. Hanlon, Whitechurch, New Ross.	Wexford.	Do.	—	—	—
M. Lyons, Craanford, Gorey.	Do.	Clay loam.	—	—	—
M. Cregan, Ballinvoira, Ballingrane.	Limerick.	Light limestone loam.	—	—	—
J. Ooghlan, Breakmore, Clarina.	Do.	Do.	—	—	—
Average yield per statute acre in 1908.			10 19	31	12 10
Do.	Do.	1907.	—	—	—
Do.	Do.	1906.	—	—	—
Do.	Do.	1905.	—	—	—
Do.	Do.	1904.	—	—	—
Do.	Do.	1903.	—	—	—
Do.	Do.	1902.	—	—	—
Do.	Do.	1901.	—	—	—

IV.—MANGELS.

A.—MANURIAL TEST (Old Series).

This experiment, designed with the object of discovering a simple and profitable method of manuring the mangel crop, was similar to that carried out in 1907. The experiments were carried out on twenty-four farms in Counties Cavan, Cork, Donegal, Fermanagh, Kerry, King's County, Limerick, Mayo, Monaghan, Queen's County, Roscommon, Tipperary, Wexford, and Wicklow. The complete results of the experiments are shown in Table I., pp. 318–319.

For convenience of reference the average results are reproduced in the following table :—

Plot.	Manures applied per statute acre.	Average yield per acre.	Increase due to Manures.	Value of Increase.	Cost of Manures.	Estimated Profit per acre.
		tons cwt.	tons cwt.	£ s. d.	£ s. d.	£ s. d.
1	No Manure.	8 11	—			
2	20 tons Farmyard Manure.	26 7	17 16	8 18 0	4 0 0	4 18 0
3	20 tons Farmyard Manure, 4 cwt. Superphosphate.	27 5	18 14	9 7 0	4 12 0	4 15 0
4	20 tons Farmyard Manure, 4 cwt. Superphosphate, 2 cwt. Sulphate of Ammonia.	31 2	22 11	11 5 6	6 2 0	5 3 6
5	20 tons Farmyard Manure, 4 cwt. Superphosphate, 2 cwt. Sulphate of Ammonia, 4 cwt. Kainit.	33 10	24 19	12 9 6	6 13 0	5 16 6
6	20 tons Farmyard Manure, 4 cwt. Superphosphate, 2 cwt. Sulphate of Ammonia, 4 cwt. Salt.	34 13	26 2	13 1 0	6 8 0	6 13 0
7	20 tons Farmyard Manure, 4 cwt. Superphosphate, 4 cwt. Salt, 2 cwt. of Nitrate of Soda (applied in 2 dressings after thinning).	34 8	25 17	12 18 6	6 3 0	6 15 6

Plot 2 received an application of 20 tons of dung; each of Plots 3, 4, 5, 6, 7 was dressed with a different mixture of artificial manures in addition to this quantity of dung.

The effects of these different mixtures were as follows:—The addition of 4 cwt. superphosphate increased the crop, but not to such an extent as to leave any profit from its use; the further addition of 2 cwt. sulphate of ammonia increased the crop sufficiently to pay for the extra cost of the manure and left a profit of 8s. 6d. per acre as compared with Plot 3; while the still further addition of 4 cwt. kainit left a profit of 21s. 6d. per acre more than was obtained from Plot 3. Hence it will be seen that, although the application of a good dressing of farm-yard manure left a considerable profit, the addition of a complete mixture of

artificial manures has increased that profit by 18s. 6d. per acre after paying for the cost of the manures.

On Plot 6, 4 cwt. salt was substituted for the 4 cwt. kainit applied on Plot 5, and at the majority of centres the salt gave the heavier crop.

On the average, the salt produced a yield of 1 ton 3 cwt. more than the kainit, and as the cost was only about half that of the kainit, a substantial profit of 16s. 6d. per acre is shown in favour of the salt.

A similar result has been obtained in previous years, and from the results of the experiments conducted during the last eight years it is shown that as a rule mangels respond better to a dressing in which salt is included than to one containing kainit.

The application on Plot 7 of two successive top dressings of 1 cwt. nitrate of soda resulted in an increased profit of 2s. 6d. as compared with Plot 6.

The following table shows the average yields obtained in the experiments carried out in 1901—1908, inclusive.

Plot	Manure.	Quantity applied per statute acre.	Average yield in 1901.	Average yield in 1902.	Average yield in 1903.	Average yield in 1904.	Average yield in 1905.	Average yield in 1906.	Average yield in 1907.	Average yield in 1908.
1	No Manure.		15 cwt. 9	17 cwt. 1	15 cwt. 3	18 cwt. 8	13 cwt. 4	19 cwt. 7	18 cwt. 10	11 cwt. 8
2	Farmyard Manure.	15 tons, 1901-1905.	26 12	18 0	16 5	22 3	16 13	24 19	25 15	26 7
3	Farmyard Manure and Superphosphate.	20 tons, 1906-7. 15 tons, 1901-1905. 20 tons, 1906-7. 4 cwt. Superphosphate.	27 13	19 7	17 13	25 3	19 8	27 2	26 17	27 5
4	Farmyard Manure, Superphosphate and Sulphate of Ammonia.	15 tons, 1901-1905. 20 tons, 1906-7. 4 cwt. Superphosphate. 2 cwt. Sulphate of Ammonia.	31 0	22 11	23 12	27 7	21 3	29 5	29 15	31 2
5	Farmyard Manure, Superphosphate, Sulphate of Ammonia, and Kainit.	15 tons, 1901-1905. 20 tons, 1906-7. 4 cwt. Superphosphate. 2 cwt. Sulphate of Ammonia. 2 cwt. Kainit, 1901-1905. 4 cwt. Kainit, 1906-7.	33 12	24 18	24 6	29 17	23 13	32 1	32 15	33 10
6	Farmyard Manure, Superphosphate, Sulphate of Ammonia, and Salt.	15 tons, 1901-1905. 20 tons, 1906-7. 4 cwt. Superphosphate. 2 cwt. Sulphate of Ammonia. 4 cwt. Salt.	36 11	25 12	25 10	31 18	24 10	34 7	34 5	34 13
7	Farmyard Manure, Superphosphate, Salt, and *Nitrate of Soda.	20 tons. 4 cwt. Superphosphate. 4 cwt. Salt. 2 cwt. Nitrate of Soda.	—	—	—	—	—	34 14	32 19	34 8

* Applied in two top dressings after the mangels were thinned.

MANGEL EXPERIMENT.--

TABLE I.—SHOWING THE RETURNS PER

Name and Address of Farmer.	County.	Character of Soil.	Variety of Mangel.	Plot 1. No Manure.
				tons cwt
T. Gaffney, Kilnacrot, Mountnugent.	Cavan.	Stiff loam.	Long Red.	6 16
H. O'Connell, Lislea, Virginia.	do.	Loam.	Yellow Globe.	2 4
L. Fitzsimons, Polentemple, Virginia.	do.	Heavy loam.	do.	6 4
M. Buckley, Ivy Cottage, Bishopstown.	Cork, W.	Light loam.	do.	24 0
J. W. Fahy, Kilerua, Ovens.	do.	Clay loam.	do.	5 14
W. H. Roberts, Rusubbrook, Bridgetown.	Donegal.	Loam.	do.	15 11
E. M. Archdale, Riversdale, Ballinamallard.	Fetmanagh.	Light loam.	do.	5 0
T. Lawlor, Ballymacquin, Ardferk.	Kerry.	Loam.	do.	22 10
J. Murphy, Listrim, Spa.	do.	Stiff clay.	Orange Globe.	2 6
H. Boles, Banagher.	King's Co.	Deep bog.	Yellow Globe.	16 11
B. Mulherin, Cocneal, Ballysokeery.	Mayo.	Medium loam.	Prizewinner.	7 18
G. Burke, Oldtown, Irishtown.	do.	Peaty.	do.	8 16
J. Hughes, Mayo Abbey, Ballyglass.	do.	Medium loam.	do.	8 0
M. Bishop, Laragh, Castleblayney.	Monaghan.	Good loam.	Orange Globe.	4 0
T. Gowing, Kilmiachy, Maryborough.	Queen's Co.	Medium loam.	Yellow Globe.	1 12
J. Higgins, Tully, Strokestown.	Roscommon.	Heavy clay.	Long Red.	3 10
J. O'Brien, Killothlea.	Tipperary, S.	Clay.	Yellow Globe.	2 3
J. Kavanagh, Ballygarret, Craanford.	Wexford.	Shingly clay.	Orange Globe.	5 5
W. Fector, Clonroche.	do.	Light loam.	Yellow Globe.	0 0
J. V. Gahan, Park, Clonagal.	Wicklow.	Clay loam.	do.	0 0
P. K. Walsh, Bilboa, Cappamore.	Limerick.	Gravelly loam.	do.	17 12
P. Fitzgerald, Bosbrien, Limerick.	do.	Light limestone loam.	do.	15 11
T. Fogarty, Moyne, Templemore.	Tipperary, N.	Loam.	do.	9 0
J. Wolfe, Rockfort, Nenagh.	do.	do.	do.	15 0
Average Yield per statute acre.				8 11
Increase due to Manures.				—
Value of the Increase: Mangels estimated at 10s. per ton.				—
Cost of Manures.				—
Estimated profit per statute acre.				—

MANURIAL TEST (OLD SERIES).

STATUTE ACRE FROM EACH CENTRE.

Plot 2.	Plot 3.	Plot 4.	Plot 5.	Plot 6.	Plot 7.
20 tons Farmyard Manure.	20 tons Farmyard Manure. 4 cwt. Superphosphate.	20 tons Farmyard Manure. 4 cwt. Superphosphate. 2 cwt. Sulphate of Ammonia.	20 tons Farmyard Manure. 4 cwt. Superphosphate. 2 cwt. Sulphate of Ammonia. 4 cwt. Kainit.	20 tons Farmyard Manure. 4 cwt. Superphosphate. 2 cwt. Sulphate of Ammonia. 4 cwt. Salt.	20 tons Farmyard Manure. 4 cwt. Superphosphate. 4 cwt. Salt. 2 cwt. Nitrate of Soda (to be applied after thinning, in two dressings).
tons cwt.	tons cwt.	tons cwt.	tons cwt.	tons cwt.	tons cwt.
26 2	30 16	33 18	36 6	41 7	36 9
18 2	23 6	26 5	29 11	30 8	27 1
20 4	22 12	29 4	34 0	37 8	32 11
42 12	38 16	40 2	42 16	44 17	48 4
33 13	32 0	41 1	44 7	44 16	49 2
29 18	31 0	32 8	33 8	33 18	30 7
25 0	23 10	24 5	24 0	26 10	24 5
32 0	35 11	35 0	34 18	36 12	36 14
11 6	13 13	15 7	16 0	19 14	25 18
25 6	23 1	26 11	29 16	31 0	32 3
22 10	24 10	26 0	29 8	30 0	32 6
25 18	24 16	27 6	28 18	32 6	32 16
20 16	20 4	21 10	22 16	22 14	23 0
25 8	24 5	32 12	35 6	28 10	33 4
21 7	28 3	29 8	34 0	36 13	36 8
11 10	16 5	19 11	19 18	20 3	19 0
25 7	26 4	33 17	35 7	35 18	34 19
24 2	24 4	31 14	33 3	35 1	34 11
32 6	32 2	36 6	42 19	42 12	42 19
31 2	33 0	37 14	41 19	40 1	41 19
27 0	27 10	28 18	31 5	30 16	29 4
27 10	24 18	34 7	38 2	29 3	31 5
22 0	19 18	24 6	28 10	34 8	31 0
51 8	56 0	58 9	58 0	67 0	60 0
26 7	27 5	31 2	33 10	34 13	34 8
17 16	18 14	22 11	24 19	26 2	26 17
<i>£ s. d.</i>	<i>£ s. d.</i>	<i>£ s. d.</i>	<i>£ s. d.</i>	<i>£ s. d.</i>	<i>£ s. d.</i>
8 18 0	8 7 0	11 5 6	12 9 6	13 1 0	12 18 6
4 0 6	4 12 0	6 2 0	6 13 8	6 8 0	6 3 0
4 18 0	4 15 0	5 3 6	5 16 6	6 13 0	6 15 6

MANGEL EXPERIMENT.—

TABLE II.—SHOWING THE RETURNS

Name and Address of Farmer.	County.	Character of Soil.	Variety of Mangel.	Plot 1.	
				20 tons Farmyard Manure. 3 cwt. Super-phosphate. 2 cwt. Sulphate of Ammonia. 4 cwt. Salt.	
				tons	cwt.
E. Moore, Cannonsquarter, Tullow.	Carlow.	Clay loam,	Yellow Globe.	50	11
J. Murphy, Bahana, Glynn.	do.,	Medium loam,	do.,	39	13
J. Bird, Ballyduke, Ovens-town.	Cork, E.,	Gravelly loam,	Prizewinner.	32	16
P. O'Callaghan, Ballysimon, Dromahane.	do.,	Moory loam,	Improved Yellow Globe.	40	18
D. Ross, Tweedmount, Blarney.	do.,	Gravelly loam,	Smithfield Yellow Globe.	37	8
M. Buckley, Ivy Cottage, Bishopstown.	Cork, W.,	Light loam,	Yellow Globe.	47	4
J. W. Fahy, Kilerua, Ovens.	do.,	Clay loam,	do.,	50	8
W. Noble, Drumeunmy, Lisnasken.	Fermanagh,	Loam,	do.,	43	4
T. Shaw, Barberstown, Straffan.	Kildare.	do.	do.,	35	10
J. B. Alexander, Moatfield, Athy.	do.,	do.,	do.,	32	5
J. Moxham, Oolehill.	Longford,	Clay loam,	do.,	18	4
J. Wolfe, Rockfort, Nenagh.	Tipperary, N.,	—	—	36	7
E. Slatery, Dundrum.	Tipperary, S.,	Clay,	Yellow Globe.	42	6
M. Moloney, Carron.	do.,	Loam,	do.,	28	10
T. Flynn, Twomilebridge, Dungarvan.	Waterford.	Heavy loam,	do.,	43	15
P. Fenton, Tinnescart, Aglish.	do.,	Medium loam,	do.,	41	10
S. Cullen, Bonabrocka, Wicklow.	Wicklow,	Clay loam,	do.,	42	18
Average Yield per statuteacre,				40	4
Value of Crop: Mangels estimated at 10s. per ton.				20	2 0
Cost of Manures,				8	5 0
Value of Crop, after deducting Cost of Manures.				13	17 0

MANURIAL TEST (NEW SERIES).

PER STATUTE ACRE FROM EACH CENTRE.

Plot 2.	Plot 3.	Plot 4.	Plot 5.	Plot 6.	Plot 7.
20 tons Farm- yard Manure. 4 cwt. Super- phosphate. 2 cwt. Sulphate of Ammonia. 4 cwt. Salt.	20 tons Farm- yard Manure. 5 cwt. Super- phosphate. 2 cwt. Sulphate of Ammonia. 4 cwt. Salt.	20 tons Farm- yard Manure. 4 cwt. Super- phosphate. 1 cwt. Sulphate of Ammonia. 4 cwt. Salt.	20 tons Farm- yard Manure. 4 cwt. Super- phosphate. 3 cwt. Sulphate of Ammonia. 4 cwt. Salt.	20 tons Farm- yard Manure. 4 cwt. Super- phosphate. 2 cwt. Sulphate of Ammonia. 2 cwt. Salt.	20 tons Farmyard Manure. 4 cwt. Super- phosphate. 2 cwt. Sulphate of Ammonia. 6 cwt. Salt.
tons cwt.	tons cwt.	tons cwt.	tons cwt.	tons cwt.	tons cwt.
49 10	47 16	41 18	47 5	43 5	55 1
42 0	41 7	47 18	43 10	40 10	36 15
34 17	34 11	37 6	34 9	28 10	32 12
45 6	43 15	41 8	38 11	35 17	30 12
39 1	37 3	34 17	37 6	35 10	38 8
48 16	48 18	40 0	50 1	46 5	46 18
43 4	48 1	45 5	45 3	48 6	44 3
43 18	41 1	35 17	38 19	37 17	39 14
35 5	39 15	35 0	38 15	34 0	37 5
44 0	44 10	42 10	41 10	45 0	48 8
17 11	16 12	17 11	19 10	20 16	20 16
54 5	57 8	54 11	58 17	48 9	62 14
42 12	44 3	40 4	46 2	45 0	42 8
31 13	32 13	27 19	34 16	32 15	35 3
47 0	47 18	46 5	50 0	44 4	51 17
43 2	41 5	42 1	45 4	40 18	41 17
41 9	39 2	42 8	41 19	33 0	47 2
41 8	41 10	39 15	42 1	38 14	41 17
£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
20 14 0	20 15 0	19 17 6	21 0 6	19 7 0	20 18 6
6 8 0	6 11 0	5 13 0	7 3 0	6 5 0	6 11 0
14 6 0	14 4 0	14 4 6	13 17 6	13 2 0	14 7 6

B.—MANURIAL TEST (New Series).

The results of the previous seven years' experiments have gone to show that the most profitable method that has been adopted in these experiments for the manuring of the mangel crop was that indicated on Plot 6, on which there was applied, in addition to a good dressing of dung, a mixture of superphosphate, sulphate of ammonia, and salt. The question, however, naturally arises as to whether the quantities of these ingredients so applied were the best, and in order to furnish an answer to that question a new series of experiments was devised last year. On each plot in this series the same three manures were applied in addition to a dressing of dung, but the quantity of each ingredient was varied. This new series was carried out on seventeen farms in Counties Carlow, Cork, Fermanagh, Kildare, Longford, Tipperary, Waterford, and Wicklow. The plan of the experiments and the complete results obtained are shown in Table II., pp. 320-21. It will be seen from this table that the yield from the various plots is fairly consistent; the greatest difference between any two plots being less than $3\frac{1}{2}$ tons per acre. When the cost of the manures is taken into consideration these results tend to show that the mixture applied to Plot 6 in the old series of experiments is as profitable as any of the variations of that mixture which have been used in the new series. Before, however, expressing any definite opinion it will be necessary to have further trials carried out.

V.—OATS.

A.—MANURIAL TEST (Old Series).

The experiment on the manuring of oats in 1908 was similar to those of the seven previous years, except that the plot manured with kainit alone was omitted in the experiments at present under review.

The trials were carried out on ten farms in Counties Armagh, Dublin, Donegal, Kildare, Londonderry, Louth, Monaghan, Roscommon, and Tyrone.

The object of these experiments has been to test the effects of artificial manures when used singly and in combination, and the complete results are given in Table I., pp. 324-325.

For the sake of easier reference the average figures are reproduced in the following table:—

Plot	Manures applied per Statute Acre.	Average Yield per Statute Acre.		Increase due to Manures.		Value of Increase.	Cost of Manures.	Estimated Profit per Statute Acre.
		Grain.	Straw.	Grain.	Straw.			
		Cwt. Qr.	Cwt.	Cwt. Qr.	Cwt.	£ s. d.	£ s. d.	£ s. d.
1	No manure.	16 0	27	—	—	—	—	—
2	1 cwt. Sulphate of Ammonia.	18 2	32	2 2	5	1 0 10	0 15 0	0 5 10
3	3 cwt. of Superphosphate.	18 0	30	2 0	3	0 15 2	0 9 0	0 6 2
4	1 cwt. Sulphate of Ammonia, 3 cwt. of Superphosphate.	21 2	35	5 2	0	2 2 10	1 4 0	0 18 10
5	1 cwt. Sulphate of Ammonia, 3 cwt. Superphosphate, 3 cwt. Kainit.	22 0	37	6 0	10	2 7 0	1 12 3	0 14 9

The effects of the application of the different manures were very similar to those obtained in previous years.

The plots manured with sulphate of ammonia and superphosphate, and with sulphate of ammonia, superphosphate and kainit, respectively, have invariably given profitable returns, but in the case of the plots manured with sulphate of ammonia, superphosphate, or kainit, alone, the results have been irregular, sometimes profitable, sometimes not. Although in the trials of previous years the plot dressed with kainit alone gave a slightly higher average yield than the "no manure" plot, it was decided to omit this plot in future trials, first because the profit realized from such an

OAT EXPERIMENT—

TABLE I.—Showing the Returns per

Name and Address of Farmer.	County.	Variety of Oat.	Character of Soil.	PLOT 1.	
				No Manure.	
				Grain.	Straw.
				cwt. qr.	cwt.
G. Spence, Hacknahag ..	Armagh, ..	Poland. ..	Heavy clay ..	17 1	56
A. Roe, Ballybeta, Glen- cullen.	Dublin, ..	Potato, ..	Light loam. ..	19 0	22
R. Scott, Tulnaree, Carn- donagh.	Donegal, ..	Sandy, ..	Gravelly loam.	12 1	18
P. Hogarty, Newtown, Robertstown.	Kildare, ..	Black Tartary,	Strong loam.	13 1	11
M. Duff, Church-Hill, Money more.	L'derry, ..	Potato, ..	Loam, ..	16 0	29
J. Forsythe, Gortanewry, Money more.	Do.	Poland, ..	Light clay loam	25 0	33
T. Bloomer, Termonfeekin, Drogheda.	Louth, ..	Potato, ..	Poor clay, ..	15 2	—
J. Quinn, Longfield, Castle- blayney.	Monaghan	Do., ..	Light loam, ..	7 2	17
W. Cunnane, Southpark, Castlereagh.	Roscommon	Do., ..	Heavy clay ..	17 3	34
T. Haydock, Lowertown, Dungannon.	Tyrone, ..	Longhoughton	Loam. ..	16 2	22
Average yield per statute acre,				16 0	27
Increase due to Manures,				—	—
Value of Increase : Grain at 8d. per stone and Straw 1/6 per cwt.				—	—
Cost of Manures,				—	—
Estimated profit per statute acre,				—	—

MANURIAL TEST (OLD SERIES).

Statute Acre from each Centre.

PLOT 2.			PLOT 3.			PLOT 4.			PLOT 5.		
1 cwt. Sulphate of Ammonia.			3 cwt. Superphosphate			1 cwt. Sulphate of Ammonia. 3 cwt. Superphosphate.			1 cwt. Sulphate of Ammonia. 3 cwt. Superphosphate. 3 cwt. Kainit.		
Grain.		Straw.	Grain.		Straw.	Grain.		Straw.	Grain.		Straw.
cwt.	qr.	cwt.	cwt.	qr.	cwt.	cwt.	qr.	cwt.	cwt.	qr.	cwt.
18	0	62	18	2	59	19	0	60	25	0	58
27	0	30	25	2	28	27	2	31	32	2	41
14	3	25	17	2	26	19	0	32	21	1	34
23	3	32	17	4	10	24	2	28	24	2	30
14	0	23	18	1	27	18	2	23	19	1	28
22	1	29	20	0	27	24	0	38	22	1	31
18	0	—	13	0	—	16	0	—	15	0	—
10	0	22	12	0	20	20	2	23	20	0	28
17	0	36	20	3	41	23	0	54	24	1	53
21	1	27	17	0	20	23	0	35	17	1	31
18	2	32	18	0	30	21	2	36	22	0	37
2	2	5	2	0	3	5	2	9	6	0	10
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
1	0	10	0	15	2	2	2	10	2	7	0
0	15	0	0	9	0	1	4	0	1	12	3
0	5	10	0	6	2	0	18	10	0	14	9

OAT EXPERIMENT.—

TABLE II.—Showing the Returns per

Name and Address of Farmer.	County.	Variety of Oat.	Character of Soil.	PLOT 1.	
				No Manure.	
				Grain.	Straw.
				cwt. qr.	cwt.
H. Dunlop, Ballybrakes, Ballymoney.	Antrim, ..	Poland, ..	Medium loam, ..	15 0	29
W. H. Lyle, Ballymacaulley.	Armagh, ..	Potato, ..	Gravelly loam, ..	13 0	18
M. Quinn, Avondale, Donadea.	Kildare, ..	Black Tartary, ..	Strong loam, ..	18 1	13
F. Strahan, Moone, Ballitore.	Do., ..	Do., ..	Do., ..	12 2	10
J. Kenny, Gurteen, Killa-shee.	Longford, ..	Potato, ..	Loam, ..	22 3	30
J. Doherty, Esker, Longford.	Do., ..	Do., ..	Do., ..	10 0	16
Average yield per statute acre,				15 1	19
Increase due to Manures,				—	—
Value of Increase : Grain at 8 <i>d.</i> per stone and Straw 1 <i>s.</i> 6 <i>d.</i> per cwt.,				—	—
Cost of Manures,				—	—
Estimated profit per statute acre,				—	—

MANURIAL TEST (New Series.)

Statute Acre from each Centre.

PLOT 2.		PLOT 3.		PLOT 4.		PLOT 5.		PLOT 6.	
1 cwt. Sulphate of Ammonia. 2 cwt. Superphosphate. 2 cwt. Kainit.		1 cwt. Sulphate of Ammonia. 3 cwt. Superphosphate. 2 cwt. Kainit.		1 cwt. Sulphate of Ammonia. 4 cwt. Superphosphate. 2 cwt. Kainit.		1 cwt. Sulphate of Ammonia. 3 cwt. Superphosphate. 3 cwt. Kainit.		1 cwt. Sulphate of Ammonia. 3 cwt. Superphosphate. 4 cwt. Kainit.	
Grain.	Straw.	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.
cwt. qr.	cwt.	cwt. qr.	cwt.	cwt. qr.	cwt.	cwt. qr.	cwt.	cwt. qr.	cwt.
19 3	39	20 2	43	20 3	42	22 0	44	24 2	54
16 2	21	28 2	33	19 3	23	24 2	30	19 0	23
27 3	28	26 3	30	27 2	30	30 0	23	29 0	30
14 3	16	15 2	16	16 0	17	17 0	19	14 0	15
28 2	38	30 1	40	31 0	43	31 3	46	33 1	42
17 2	26	17 0	25	18 1	25	18 0	25	18 0	25
20 3	28	23 0	31	22 1	30	23 3	31	23 0	31
5 2	9	7 3	12	7 0	11	8 2	12	7 3	12
£ s. d.		£ s. d.		£ s. d.		£ s. d.		£ s. d.	
2 2 10		2 19 4		2 13 10		3 3 4		2 19 4	
1 6 6		1 9 6		1 12 6		1 12 3		1 15 0	
0 16 4		0 9 10		1 1 4		1 11 1		1 4 4	

OAT EXPERIMENT:

TABLE III.—SHOWING THE RETURNS PER

Name and Address of Farmer.	County.	Character of Soil.	Potato.		Black Tartarian.	
			Grain.	Straw	Grain.	Straw
W. Doherty, Cashel, Gleneely Carndonagh,	Donegal,	Rich dark loam,	cwt. qr. 26 3	cwt. 48	cwt. qr. 28 0	cwt. 41
J. Kyne, Abbeytown, Caherlistrane, Tuam.	Galway,	Limestone loam,	—	—	—	—
E. Kelly, Llistrane Mills, Aughrim.	Do.,	Clay loam,	—	—	—	—
D. Dunne, Barnfield, Rathangan.	Kildare,	Gravelly loam,	22 1	—	—	—
M. Walsh, Ballydaly, Tullamore.	King's Co.,	Light sand,	18 2	22	24 1	33
H. Torpy, Clieka, Shinrone,	Do.,	Light loam,	18 3	35	16 3	32
P. Reynolds, Rosscarbon, Kilturbid.	Leitrim,	Heavy clay,	19 2	31	21 0	31
F. Rooney, Glencar,	Do.,	Stiff clay,	14 0	24	—	—
W. G. Sheppard, Callow, Ballingrane.	Limerick,	Light limestone loam,	23 0	21	—	—
T. Brennan, Ballinamuck,	Longford,	Clay loam,	23 1	40	26 1	30
P. Hounican, Mullinroe, Granard.	Do.,	Loam,	23 1	28	20 2	28
W. Crawford, Edgetown,	Do.,	Do.,	15 2	31	17 2	31
M. Devine, Ballinamuck,	Do.,	Do.,	16 2	24	20 3	26
W. Rhatigan, Fermoyle, Lanesboro'.	Do.,	Do.,	16 2	20	19 0	26
Average yield per statute acre in 1908,			19 3	29	21 2	31
Do., Do., 1907,			20 1	37	20 2	35
Do., Do., 1906,			19 3	35	19 2	30
Do., Do., 1904,			19 0	36	20 1	35
Do., Do., 1903,			18 1	41	19 3	40
Do., Do., 1902,			20 1	36	21 0	34
Do., Do., 1901,			17 0	29	17 0	26

—VARIETY TEST.

STATUTE ACRE FROM EACH CENTRE.

Banner.		Abundance.		Waverley.		Tartar King.		Newmarket.		Hamilton.	
Grain.	Straw.	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.
cwt. qr.	cwt.	cwt. qr.	cwt.	cwt. qr.	cwt.	cwt. qr.	cwt.	cwt. qr.	cwt.	cwt. qr.	cwt.
25 1	36	30 0	38	24 1	39	29 3	43	—	—	—	—
20 3	32	22 1	32	20 2	30	21 1	28	22 1	32	—	—
23 1	35	23 0	35	22 3	34	20 2	28	20 3	35	—	—
27 1	—	23 1	—	31 1	—	23 3	—	—	—	—	—
21 1	26	19 2	20	21 3	22	—	—	21 3	21	—	—
15 2	27	—	—	15 2	31	—	—	13 3	27	—	—
22 0	32	—	—	18 3	25	—	—	—	—	—	—
15 1	27	—	—	17 3	20	—	—	—	—	—	—
—	—	—	—	32 0	29	19 2	20	31 0	28	—	—
—	—	26 2	30	21 1	35	—	—	—	—	22 2	32
25 0	31	19 0	26	21 0	32	—	—	22 0	30	23 1	29
23 0	45	20 2	39	17 0	28	19 2	34	23 0	31	22 0	40
—	—	20 3	25	22 0	27	—	—	—	—	16 2	25
19 0	30	19 0	23	21 2	30	—	—	22 2	30	22 2	30
21 2	32	22 1	30	22 0	30	22 1	31	22 0	29	21 1	31
21 0	33	19 0	36	22 1	36	19 1	35	24 1	37	—	—
22 0	34	20 2	32	20 3	33	20 0	30	—	—	—	—
23 3	40	21 1	33	22 2	35	19 1	29	—	—	—	—
22 2	39	19 1	33	22 2	36	18 1	33	—	—	—	—
23 0	32	20 2	30	23 2	34	18 3	29	—	—	—	—
—	—	21 1	27	22 0	29	19 0	27	—	—	—	—

application was very small, and in fact at some centres resulted in a slight loss, and secondly because it is now generally understood that the most economical way to use potassic manures for cereals is in conjunction with nitrogenous and phosphatic manures.

The mixture of sulphate of ammonia and superphosphate applied on Plot 4 increased the crop to such an extent as to leave a profit of £0 18s. 10d. per acre, while the same mixture, with the addition of kainit, as applied on Plot 5, resulted in a profit of £0 14s. 9d. per acre. As mentioned above, these two mixtures have given satisfactory returns in each of the six years during which the experiment has been tried in this country.

While, therefore, farmers cannot always rely on getting a profitable increase in crop from the use of sulphate of ammonia, superphosphate or kainit when applied alone, yet they may be fairly confident of realising a profit when all three are used together in the same proportions as they were applied on Plot 5.

The figures referring to the past eight years' experiments are given side by side in the following table:—

Plot.	Manure applied per Statute Acre	Average yield in 1901.		Average yield in 1902.		Average yield in 1903.		Average yield in 1901.		Average yield in 1905		Average yield in 1906.		Average yield in 1907.		Average yield in 1908.	
		Grain.	Straw.	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.
1	No manure.	C. Q.	C.	C. Q.	C.	C. Q.	C.	C. Q.	C.	C. Q.	C.	C. Q.	C.	C. Q.	C.	C. Q.	C.
2	1 cwt. Sulphate of Ammonia.	13 1	22	17 0	30	14 0	26	15 1	28	15 2	23	15 2	25	17 3	28	16 0	27
3	3 cwt. Superphosphate.	16 1	27	19 3	34	15 2	29	18 3	34	18 0	27	18 3	32	20 2	34	18 2	32
3	3 cwt. Superphosphate.	16 0	27	18 0	33	16 2	27	18 0	30	17 3	26	17 3	30	21 3	35	18 0	30
3	3 cwt. Kainit.	14 0	24	18 0	30	15 0	26	17 2	29	16 3	25	—	—	—	—	—	—
4	1 cwt. Sulphate of Ammonia, 3 cwt. Superphosphate.	19 0	33	21 1	36	19 0	33	21 1	37	20 3	31	21 3	40	24 3	43	21 2	36
5	1 cwt. Sulphate of Ammonia, 3 cwt. Superphosphate, 3 cwt. Kainit.*	20 1	35	23 0	40	21 0	38	22 3	41	21 1	33	22 1	42	25 2	48	22 0	37

2 cwt. in 1901.

B.—MANURIAL TEST (New Series).

From the results of the experiments which have been carried out during the seven years, 1901-07, on the manuring of oats it will be seen that on the average the most suitable mixture that has been

used in these experiments was that indicated on Plot 5, viz.: sulphate of ammonia, superphosphate, and kainit. In order to ascertain whether the proportions of the ingredients used in this mixture were the best, a new series of experiments was devised last year. On each plot in this series (with the exception of Plot I.) the same three manures were applied, but the proportion of each ingredient was varied.

These trials were carried out on six farms in Counties Antrim, Armagh, Kildare, and Longford. The complete results of the experiments are shown in Table II., pp. 326-327.

When the cost of the manures is taken into consideration these results tend to indicate that the mixture applied to Plot 5, viz.: 1 cwt. sulphate of ammonia, 3 cwt. superphosphate, and 3 cwt. kainit, is more profitable than any of the variations which have been used in these trials. However, in view of the small number of centres it will be necessary to have further trials carried out before expressing a definite opinion on the results.

C.—VARIETY TEST.

This experiment was designed to test the cropping powers of certain newer varieties of oats as compared with those of old-established kinds, such as "Potato Oat" and "Black Tartarian." Experiments were carried out at fourteen centres in Counties Donegal, Galway, Kildare, King's County, Leitrim, Limerick and Longford. The figures obtained at each centre, together with the average yields of grain and straw produced by each variety, are given in Table III., pp. 328-329. The average yields of each variety obtained in similar experiments carried out during the past seven years (excluding 1905), are also shown in the Table.

As all the varieties were not grown at each centre a true comparison between them cannot be drawn from the average figures given in the Table.

VI.—TURNIPS.

A.—MANURIAL (Old Series).

Two series of experiments on the manuring of the turnip crop were carried out in 1908, similar to those of the seven previous years, 1901 to 1907. The objects of these experiments were:—

- (1.) To test the effects of artificial manures in combination with farmyard manure.
- (2.) To test the effects of artificial manures used alone.

The first series of experiments, designed to test the effects of the addition of artificial manures to farmyard manure, was carried out at twenty-six centres in Counties Cork, Donegal, Dublin, Fermanagh, King's County, Londonderry, Queen's County, Roscommon, Westmeath, Wexford, and Wicklow.

The results of this experiment are shown on Table I., pp. 334-335.

The application of 20 tons of dung (see Plot 2) may be regarded as a standard dressing, and one which is very generally relied on, and it was the object of the experiment to determine whether equally heavy crops could be obtained on farms where the supply of dung is necessarily limited, by supplementing a lighter dressing of farmyard manure with suitable artificial manures. A comparison of the yields obtained on Plots 2 and 4 shows that where 4 cwt. superphosphate was used along with 10 tons of dung, a slightly heavier crop was obtained than where the dung was applied alone at the rate of 20 tons per acre.

This result is practically similar to those obtained in six of the previous years' experiments. Only in one instance, in 1901, was the balance in favour of the heavier dressing of dung (to the extent of 10 cwt. of turnips per acre). There seems little doubt, therefore, that where farmyard manure is scarce, farmers may rely upon obtaining a perfectly satisfactory crop of turnips by using a lighter dressing of dung and supplementing it with an application of about 4 cwt. superphosphate per acre. The experiment was further intended to show whether other forms of artificial manure (nitrogenous and potassic) could be profitably applied along with the superphosphate (see Plots 5, 6, and 7). The returns from individual centres are again so contradictory on this point that conclusions drawn from the average figures are apt to prove misleading.

The results of these experiments for the past eight years have, however, proved conclusively that, on land in fairly good condition, where farmyard manure is applied, nitrogenous and potassic manures are not required by the turnip crop. On land,

however, which is naturally poor, or in low condition, it is probable that such manures will pay for their application.

An extra plot (No. 7) introduced into the experiments with the object of testing the relative effects of kainit and sulphate of potash on the turnip crop was continued in 1908. Plot 7 was manured with similar quantities of dung, superphosphate, and sulphate of ammonia, as were applied to Plot 6, whilst the equivalent amount of potash contained in 3 cwt. kainit was supplied in this instance in $\frac{3}{4}$ -cwt. sulphate of potash. The average yield of the two plots, and also the yield of the individual centres indicate no marked superiority of either manure.

The second series of experiments designed to test the effects of artificial manures used alone was carried out on fifteen farms in Counties Cavan, Dublin, Galway, Londonderry, Tipperary, Tyrone, Westmeath, and Wexford. The detailed results will be found in Table II., pp. 336-337.

The fact that phosphatic manures are all important to the successful growth of turnips is so well known among farmers that it is hardly necessary to call attention to the results obtained on Plot 2, to which superphosphate was applied at the rate of 4 cwt. per statute acre, the crop produced being such as to leave an estimated profit from the use of the manures of £3 18s. 10d. per acre.

From a comparison of the figures referring to Plots 2, 3, and 4, an opinion can be formed as to the advisability of adding nitrogenous and potassic manures to the superphosphate. On Plot 3 the addition of 1 cwt. sulphate of ammonia increased the crop sufficiently to pay for the extra cost of the manure, but the increase was not sufficient to warrant its use. The further addition of 3 cwt. kainit on Plot 4 resulted, however, in an increased profit of 14s. 4d. and 14s. 2d. respectively per acre, over that obtained from the use of superphosphate alone and of superphosphate and sulphate of ammonia together. The inference to be drawn from these figures is that more satisfactory returns, both as to yield of crop and as to profit, are likely to be got from the use of a *complete* mixture of manures than from the use of an *incomplete* mixture.

Plot 5 received a dressing of 6 cwt. superphosphate, $1\frac{1}{2}$ cwt. sulphate of ammonia, and $4\frac{1}{2}$ cwt. kainit, *i.e.*, half as much again of the same manures as were applied to Plot 4. This extra manuring resulted at every centre in an increased yield, as compared with Plot 4. The average profit per acre after deducting the cost of the manures is only 5s. 7d. more than that obtained on Plot 4. Nevertheless the fact that at three centres the yield on Plot 5 was 5 to

TURNIP EXPERIMENT.—MANURIAL

TABLE I.—Showing the Returns

Name and Address of Farmer.	County.	Character of Soil.	Variety of Turnip.
M. Buckley, Ivy Lodge, Bishopstown, ...	Cork, ...	Light Loam, ...	Best-of-All, ...
J. W. Fahy, Kileren, Ovens, ...	" ...	" ...	Yellow Globe, ...
J. J. P. Dickey, Carnone House, Raphoe, ...	Donegal, ...	Rich Loam, ...	Best-of-All, ...
W. Boland, Tamney, Letterkenny, ...	" ...	Light Loam, ...	" ...
J. Murtagh, The Grange, Skerries, ...	Dublin, ...	" ...	Purple Top, ...
W. Walsh, Kingswood, Clondalkin, ...	" ...	Loam, ...	" ...
W. Noble, Drumeunny, Lisnaskea, ...	Fermanagh, ...	" ...	Magnum Bonum, ...
A. T. Warren, Ballyavill, Geashill, ...	King's Co., ...	Boggy, ...	" ...
" " ...	" ...	Stiff Clay, ...	" ...
D. McCollum, Inchmearin, Coleraine, ...	Londonderry, ...	Loam, ...	Purple Top, ...
Messrs. Duff, Churchhill, Moneymore, ...	" ...	" ...	" ...
H. Bond, Kilrory, Stradbally, ...	Queen's Co., ...	Sandy Loam, ...	" ...
W. Kelly, Ballinagall, Arles, ...	" ...	Strong Loam, ...	Bronze Top, ...
J. Higgs, Ballyelider, Maryborough, ...	" ...	Sandy Loam, ...	Purple Top, ...
J. Higgins, Tully, Strokstown, ...	Rosecommon, ...	Heavy Clay, ...	Magnum Bonum, ...
M. Mulleague, Cloonbard, Castleren, ...	" ...	Medium Loam, ...	" ...
M. Regan, Cloonard, Castleren, ...	" ...	Heavy Loam, ...	" ...
J. Flannery, Ogulla, Tuls, ...	" ...	Medium Loam, ...	" ...
H. Murry, Lugboy, Elphin, ...	" ...	Heavy Clay, ...	" ...
W. Murry, Rosecommon, ...	" ...	" ...	" ...
B. Egan, Carnderry, Kiltoom, ...	" ...	Light Loam, ...	" ...
J. Naughton, Taughmacconnell, ...	" ...	" ...	" ...
J. Clavin, Ballinamill, Streamstown, ...	Westmeath, ...	" ...	Purple Top, ...
J. Cusack, Derrygolan, Kilbeggan, ...	" ...	" ...	" ...
J. Kehoe, Clonc, Monamolin, ...	Wexford, ...	Clay, ...	Best-of-All, ...
J. Kavanagh, Rathdrum, ...	Wicklow, ...	Light Clay, ...	Yellow Globe, ...
Average yield per Statute Acre,			
Increase due to Manures,			
Value of Increase : Turnips at 8s. per ton,			
Cost of Manures,			
Estimated profit per Statute Acre,			

TEST WITH FARMYARD MANURE (OLD SERIES).

per Statute Acre from each Centre.

Plot 1. No Manure.	Plot 2. 20 Tons Farmyard Manure.	Plot 3. 10 Tons Farmyard Manure.	Plot 4. 10 Tons Farmyard Manure, 4 Cwt. Super- phosphate.	Plot 5. 10 Tons Farm- yard Manure, 4 Cwt. Super- phosphate, 1 Cwt. Sul- phate of Ammonia.	Plot 6. 10 Tons Farm- yard Manure, 4 Cwt. Super- phosphate, 1 Cwt. Sulphate of Ammonia, 3 Cwt. Kainit.	Plot 7. 10 Tons Farm- yard Manure, 4 Cwt. Super- phosphate, 1 Cwt. Sulphate of Ammonia, 3 Cwt. Sulphate of Potash (not less than 90% pure).
Tons Cwt.	Tons Cwt.	Tons Cwt.	Tons Cwt.	Tons Cwt.	Tons Cwt.	Tons Cwt.
11 8	24 0	21 7	26 14	28 11	26 18	34 17
10 4	20 12	16 9	22 0	21 1	20 12	23 8
7 0	22 1	21 13	26 6	28 18	28 13	27 13
5 4	20 9	18 1	22 9	22 9	20 19	24 0
8 6	20 12	16 9	21 2	21 15	24 14	23 17
28 15	32 19	32 3	32 0	35 4	33 2	32 17
0 0	22 6	20 13	23 7	24 12	22 11	22 4
6 16	24 19	18 9	22 1	24 7	24 12	21 10
6 16	25 12	18 14	26 2	26 18	28 3	27 3
0 10	34 2	28 5	32 5	33 12	34 16	34 0
16 0	29 5	27 9	31 16	31 18	31 16	32 11
7 1	14 8	15 18	15 8	15 13	19 4	20 12
3 14	15 0	10 15	12 8	15 5	15 4	13 4
6 9	19 13	12 6	21 19	21 12	23 7	20 3
8 4	17 18	17 16	20 15	23 11	23 12	23 10
14 13	23 5	18 19	28 17	28 19	20 0	20 6
12 6	22 1	21 17	24 0	24 17	25 0	24 19
7 17	19 17	18 1	19 16	21 19	22 7	22 7
9 3	24 0	22 8	24 5	24 11	24 5	24 15
8 11	19 11	18 18	21 1	23 2	23 7	23 18
7 13	23 0	21 7	22 13	24 17	24 19	25 4
6 4	23 7	17 4	21 1	24 16	26 6	25 13
3 8	16 2	12 10	18 0	17 0	18 0	20 0
1 8	16 0	11 2	15 5	15 5	16 13	14 11
3 4	25 2	23 15	27 0	27 6	27 19	28 12
0 0	12 16	11 5	13 7	13 17	14 2	14 8
7 14	21 18	19 0	22 15	24 1	24 5	24 9
—	14 4	11 6	15 1	16 7	16 11	16 15
—	£ s. d. 5 13 7	£ s. d. 4 10 5	£ s. d. 6 0 5	£ s. d. 6 10 10	£ s. d. 6 12 5	£ s. d. 6 14 0
—	4 0 0	2 0 0	2 12 0	3 7 0	3 15 3	3 15 3
—	1 13 7	2 10 5	3 8 5	3 3 10	2 17 2	2 18 9

TURNIP EXPERIMENT.—MANURIAL

TABLE II.—Showing the Returns

Name and Address of Farmer.	County.	Character of Soil.	Variety of Turnip.
C. Gaffney, Kilbride, Mountnugent,	Cavan, ...	Loam, ...	Purple-top Swede,
M. Lynch, Strumat, Virginia, ...	" ...	" ...	Abundance, ...
J. Daly, Moyne Lodge, Baldoyle,...	Dublin, ...	Strong Loam, ...	Purple-top Swede,
P. Fahy, Cartymore, Athenry, ...	Galway, ...	Light Loam, ...	Best-of-All, ...
P. Lewis, Crossford, Gort, ...	" ...	" ...	" ...
A. Moore, Cranny, Moneymore, ...	Londonderry, ...	Medium Loam,...	Purple-top Swede,
W. Kyle, Culmady, Upperlands, ...	" ...	" ...	Purple-top Aber-
J. Wolfe, Rockfort, Nenagh, ...	Tipperary, ...	Loam, ...	deen Magnum Bonum,
J. Brennan, Ballyneale, ...	" ...	" ...	Purple-top Swede,
T. Lacy, Attybrick, ...	" ...	Clay Loam, ...	" ...
H. Alcorn, Lakeview, Omagh, ...	Tyrone, ...	Loam, ...	Best-of-All, ...
P. Cunningham, Shergim, Omagh,	" ...	Medium Loam,...	Magnum Bonum,
J. Cary, Condranstown, Castletown,	Westmeath, ...	Loam, ...	Purple-top Swede,
J. Kehoe, Clone, Monamolin, ...	Wexford, ...	Clay, ...	Best-of-All, ...
M. M'Donald, Milesbhogue, Camolin,	" ...	Shingly Clay, ...	Magnum Bonum,
Average Yield per Statute Acre,			
Increase due to Manures,			
Value of Increase. Turnips at 8s. per ton,			
Cost of Manures,			
Estimated Profit per Statute Acre,			

TEST (WITHOUT FARMYARD MANURE). (OLD SERIES.)

per Statute Acre from each Centre.

Plot 1. No Manure.	Plot 2. 4 Cwt. Superphosphate.	Plot 3. 4 cwt. Superphosphate, 1 cwt. Sulphate of Ammonia.	Plot 4. 4 cwt. Superphosphate, 1 cwt. Sulphate of Ammonia, 3 cwt. Kainit.	Plot 5. 6 cwt. Superphosphate, 1½ cwt. Sulphate of Ammonia, 4½ cwt. Kainit.
Tons Cwt.	Tons Cwt.	Tons Cwt.	Tons Cwt.	Tons Cwt.
5 11	14 16	15 1	19 6	21 7
9 18	13 1	16 10	21 9	22 11
10 18	14 15	15 1	18 15	19 6
2 10	8 8	12 15	15 18	18 6
4 6	11 4	13 2	15 0	18 10
14 11	23 10	25 5	30 5	31 9
4 5	19 17	19 0	22 11	28 3
2 3	20 7	23 1	29 2	31 6
0 15	17 16	18 10	22 18	25 3
3 12	18 0	19 7	22 19	26 12
0 0	21 3	26 14	20 17	28 3
5 14	19 11	21 9	20 0	25 11
1 10	5 1	5 12	13 2	14 1
3 4	15 6	16 1	19 8	24 2
4 1	19 18	21 4	21 17	22 15
4 17	16 4	18 2	20 18	23 16
-	11 7	13 5	16 1	18 19
-	£ s. d. 4 10 10	£ s. d. 5 6 0	£ s. d. 6 8 5	£ s. d. 7 11 7
-	0 12 0	1 7 0	1 15 3	2 12 10
-	3 18 10	3 19 0	4 13 2	4 18 9

TURNIP EXPERIMENT.—MANURIAL TEST

TABLE III.—Showing the Returns

Name and Address of Farmer.	County.	Character of Soil.	Variety of Turnip.	Plot 1.	
				10 tons Farm-yard Manure. 4 cwt. Super-phosphate.	
				tons	cwt.
G. Craig, Brownodol, Doagh.	Antrim, ..	Clay loam, ..	Victor, ..	24	15
D. Love, Kilcreen, Glarryford.	Do., ..	Medium loam,	Abundance. ..	22	4
D. Patterson, Ballywatt, Dervock.	Do., ..	Do., ..	Magnum Bonum	29	19
J. Lockhart, Alderside, Newry.	Armagh, .	Light loam, ..	Do., ..	24	18
J. Donaghy, Corliss, Crossmaglen	Do., ..	Do., ..	Nonpareil, ..	28	10
P. Dowling, Slaneyquarter, Tullogh	Carlow, ..	Clay loam, ..	Magnum Bonum,	23	19
J. Lendrum, Cleen, Five-miletown,	Fermanagh,	Sandy loam, ..	Do., ..	22	10
W. Noble, Drumeumny, Lisnaskea.	Do., ..	Loam, ..	Do., ..	18	12
M. Flood, Donore, Naas.	Kildare, ..	Do., ..	Bronze Top, ..	30	16
W. S. Yates, Leinster Lodge, Athy.	Do., ..	Light loam, ..	Purple Top, ..	18	6
W. Crawford, Edgeworthstown.	Longford,	Loam, ..	Do., ..	17	5
J. Broxham, Colehill, ..	Do., ..	Do., ..	Do., ..	18	8
M. Cullen, Mucklagh, Tinahely.	Wicklow, ..	Light Clay, ..	Do., ..	26	14
Average yield per statute acre,				23	12
Value of Crop : Turnips at 8s. per ton, ..				£	s. d.
				9	8 10
Cost of Manures,				2	12 0
Value of Crop after deducting cost of manures, ..				6	16 10

WITH FARMYARD MANURE) —New Series.

per Statute Acre from each Centre.

Plot 2. 10 tons Farm- yard Manure. 5 cwt. Super- phosphate.	Plot 3. 10 tons Farm- yard Manure. 6 cwt. Super- phosphate.	Plot 4. 10 tons Farm- yard Manure. 4 cwt. Basic Slag.	Plot 5. 10 tons Farm- yard Manure. 5 cwt. Basic Slag.	Plot 6. 10 tons Farm- yard Manure. 6 cwt. Basic Slag.
tons cwt.	tons cwt.	tons cwt.	tons cwt.	tons cwt.
25 15	30 6	23 5	26 0	26 10
23 7	22 7	20 18	23 19	23 13
29 19	30 10	28 16	26 13	28 11
29 12	28 7	28 10	29 9	27 7
21 18	25 16	24 16	24 2	25 4
25 11	25 5	22 13	25 8	26 4
23 15	26 5	25 0	26 0	26 0
19 0	18 6	19 4	18 3	17 1
30 6	30 0	27 16	27 12	27 12
19 0	17 10	18 4	17 2	17 0
20 4	23 0	16 2	18 8	20 4
19 0	20 2	20 8	20 14	20 15
28 16	32 0	27 4	27 15	28 5
24 6	25 8	23 6	23 19	24 4
£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
9 14 5	10 3 2	9 6 5	9 11 7	9 13 7
2 15 0	2 18 0	2 12 0	2 15 0	2 18 0
6 19 5	7 5 2	6 14 5	6 16 7	6 15 7

TURNIP EXPERIMENT.—MANURIAL

TABLE IV.—Showing the Returns

Name and Address of Farmer.	County.	Character of Soil.	Variety of Turnip.	PLOT 1. 4 cwts. Super- phosphate, 1 cwt. Sulphate of Ammonia, 3 cwts. Kainit.	
				tons	cwt.
W. Barklie, Lismeavary, Ballynure.	Antrim, ..	Medium loam,	Joe Chamber- lain.	25	4
P. Dowling, Slaneyquarter, Tullow.	Carlow, ..	Clay loam, ..	Magnum Bonum.	26	14
J. Joyce, Ballyroughan, Borris.	Do., ..	Medium loam,	Purple-top Swede.	18	0
Ed. O'Loughlin, Kilmoney, Rathangan.	Kildare, ..	Strong loam, ..	Do., ..	18	12
N. Halligan, Longhill, Ar- dagh.	Longford,	Loam, ..	Do., ..	28	0
J. Brennan, Ballyneale,	Tipperary,	Do., ..	Do., ..	22	18
T. Lacy, Attybrick, ..	Do., ..	Do., ..	Do., ..	22	19
M. Cullen, Mucklagh, Tina- hely.	Wicklow, ..	Light clay, ..	Do., ..	22	0
Average yield per statute acre,				23	1
Value of Crop: Turnips at 8s. per ton, ..				£	s. d.
				9	4 5
Cost of Manures,				1	15 3
Value of Crop after deducting cost of Manures,				7	9 2

TEST (WITHOUT FARMYARD MANURE) —New Series.

per Statute Acre from each Centre.

	PLOT 2. 5 cwt. Superphosphate. 1 cwt. Sulphate of Ammonia. 3 cwt. Kainit.	PLOT 3. 6 cwt. Superphosphate. 1 cwt. Sulphate of Ammonia. 3 cwt. Kainit.	PLOT 4. 4 cwt. Basic Slag. 1 cwt. Sulphate of Ammonia. 3 cwt. Kainit.	PLOT 5. 5 cwt. Basic Slag. 1 cwt. Sulphate of Ammonia. 3 cwt. Kainit.	PLOT 6. 6 cwt. Basic Slag. 1 cwt. Sulphate of Ammonia. 3 cwt. Kainit.
	tons cwt.	tons cwt.	tons cwt.	tons cwt.	tons cwt.
	26 13	27 10	29 7	29 12	30 11
	26 11	23 16	23 19	26 10	27 19
	19 16	20 11	19 4	18 13	19 8
	17 16	19 4	18 15	18 0	18 8
	30 0	33 0	23 0	24 0	25 0
	23 11	23 19	23 6	26 18	24 13
	25 17	25 8	22 10	23 12	25 19
	23 0	24 1	18 17	20 19	22 0
	23 18	24 14	22 7	23 10	24 5
	£ s. d. 9 11 2	£ s. d. 9 17 7	£ s. d. 8 18 10	£ s. d. 9 8 0	£ s. d. 9 14 0
	1 18 3	2 1 3	1 15 3	1 18 3	2 1 3
	7 12 11	7 16 4	7 3 7	7 9 9	7 12 9

TURNIP EXPERIMENT.—

TABLE V.—Showing the Returns per

Name and Address of Farmer.	County.	Character of Soil.	Stirling Castle. (1)	Im- proved Purple Top. (2)	Ele- phant. (3)	Kan- garoo. (4)
			T. C.	T. C.	T. C.	T. C.
S. Nevin, Claughey, Ballymoney.	Antrim, ...	Medium Loam,	15 16	18 4	18 11	19 4
J. Webster, Ballykeenan, Myshall.	Carlow, ...	Light Moory, ...	12 3	15 12	16 3	19 11
J. J. P. Dickey, Carnone, Raphoe.	Donegal, ...	Rich Loam, ...	20 0	19 14	20 5	22 1
J. Snodgrass, Fir Grove, Ballyindrait.	" ...	Clay Loam, ...	17 5	19 5	16 6	20 15
E. M. Archdale, Riversdale, Ballinamallard.	Fermanagh.	Light Loam, ...	17 18	25 0	20 10	19 15
Rev. J. Hall, Garvery, Enniskillen.	" ...	" ...	23 19	27 14	26 3	25 7
T. Dunne, Lisodigne, Spa, ...	Kerry, ...	Friable Loam, ...	—	18 18	20 10	20 2
T. Foley, Anglont, Killorglin,	" ...	Gravelly, ...	—	27 2	29 11	25 18
J. Brophy, Morganstown, Ballymore.	Kildare, ...	Loam, ...	20 0	24 10	—	20 5
T. McGrath, Bamford, Kilkenny.	Kilkenny, ...	" ...	—	21 17	18 8	17 3
P. Power, Tullamaine, ...	" ...	Clay Loam, ...	—	15 12	16 1	11 2
P. Phelan, Ballyragget, ...	" ...	Stiff Loam, ...	—	12 19	13 2	—
M. Conry, Coolmakean, Claremorris.	Mayo, ...	Clay, ...	18 5	23 4	20 17	18 10
T. Carney, Ballyaradun, Ballinrobe.	" ...	Strong Clay, ...	22 6	24 8	23 4	26 16
T. Brady, Carnaghan, Balla,	" ...	Medium Loam.	16 10	20 18	21 6	19 4
R. Pollock, Billis, Monaghan,	Monaghan ...	" ...	—	23 17	27 18	38 7
R. Scallan, Ballyvaloo, Blackwater.	Wexford, ...	Sandy, ...	—	—	19 17	20 7
J. O'Connor, Ballyfarnogue, Screen.	" ...	" ...	—	—	11 4	13 3
Average Yield per Statute Acre in 1908,			18 8	21 3	20 0	21 1
Average Yield per Statute Acre in 1907,			21 12	23 13	22 16	21 2
Average Yield per Statute Acre in 1906,			25 0	27 16	26 2	27 3
Average Yield per Statute Acre in 1905,			23 16	24 10	23 7	25 16
Average Yield per Statute Acre in 1904,			26 8	25 16	25 17	25 1
Average Yield per Statute Acre in 1903,			25 11	25 19	24 4	24 18
Average Yield per Statute Acre in 1902,			19 15	20 11	19 16	22 6
Average Yield per Statute Acre in 1901,			22 16	22 6	22 5	25 6

VARIETY TEST.

Statute Acre from each Centre.

Best of All. (5)	Magnum Bonum. (6)	Triumph. (7)	Bronze Top. (8)	Monarch. (9)	Aberdeen Green Top. (10)	Centenary. (11)	Fosterion Hybrid. (12)	Aberdeen Purple Top. (13)
T. C.	T. C.	T. C.	T. C.	T. C.	T. C.	T. C.	T. C.	T. C.
20 7	17 11	18 19	20 9	17 19	27 16	34 9	28 13	31 4
19 9	19 8	17 16	13 19	—	—	—	—	—
25 4	23 2	23 18	20 14	20 9	27 9	23 8	23 14	27 7
22 0	20 11	22 11	20 19	19 11	—	—	—	—
24 3	24 9	22 17	21 1	23 0	32 6	38 4	32 10	28 15
26 19	26 4	29 2	23 3	23 17	26 8	26 15	24 12	25 0
19 18	20 10	—	21 18	18 18	25 14	29 14	—	—
25 18	24 14	—	27 10	23 2	—	—	—	—
24 5	23 10	26 0	19 17	22 15	—	—	27 0	—
22 0	24 6	—	19 14	20 14	19 18	28 6	23 15	—
18 10	14 6	—	18 3	13 13	—	—	—	17 10
13 8	13 13	—	11 1	11 7	—	18 7	18 19	17 14
23 8	22 18	18 17	19 13	23 3	27 10	27 0	26 16	26 16
26 10	25 16	19 0	22 15	23 19	28 4	29 16	26 5	28 6
20 6	20 6	20 9	21 0	21 6	24 8	25 14	23 6	23 0
37 8	37 8	—	37 8	37 8	38 7	38 7	46 0	35 10
19 19	19 16	—	26 18	18 12	16 12	26 16	—	21 19
14 16	14 3	—	16 3	12 15	16 10	22 3	—	19 5
22 9	21 16	21 19	20 18	20 15	25 19	28 8	27 8	25 4
26 5	25 9	24 0	24 10	19 13	26 2	30 15	27 13	28 2
29 13	27 10	28 0	25 7	26 10	26 11	29 5	27 4	25 15
26 14	26 10	24 15	—	—	28 6	36 10	31 0	29 6
27 5	27 11	26 19	—	—	30 7	36 18	30 16	30 8
26 5	25 14	25 18	—	—	28 8	36 16	29 17	28 2
23 11	23 6	24 8	—	—	30 3	27 4	24 5	20 8
27 9	27 12	24 7	—	—	24 10	—	24 17	22 1

The following Tables show the average results obtained in similar experiments carried out in the seven previous years, 1901 to 1907, and those of 1908.

(1.) *Artificial Manures used in combination with Farmyard Manure.*

Manure.	Yield per Statute Acre in 1901.	Yield per Statute Acre in 1902.	Yield per Statute Acre in 1903.	Yield per Statute Acre in 1904.	Yield per Statute Acre in 1905.	Yield per Statute Acre in 1906.	Yield per Statute Acre in 1907.	Yield per Statute Acre in 1908.
	Tons Cwt. 5 8	Tons Cwt. 5 14	Tons Cwt. 2 4	Tons Cwt. 5 15	Tons Cwt. 7 3	Tons Cwt. 6 15	Tons Cwt. 7 16	Tons Cwt. 7 14
No Manure, ...								
20 tons Farmyard Manure, ...	23 19	22 16	19 3	26 6	23 9	23 10	22 9	21 18
10 tons Farmyard Manure, ...	19 4	17 14	14 5	22 4	20 9	20 4	18 19	19 0
10 tons Farm- yard Manure, 4 cwt. Superphos- phate, ...	23 10	23 9	20 9	27 0	25 0	24 11	23 5	22 15
10 tons Farm- yard Manure, 4 cwt. Superphos- phate, 1 cwt. Sulphate of Ammonia, ...	21 5	25 12	21 19	28 16	25 11	24 13	24 14	24 1
10 tons Farm- yard Manure, 4 cwt. Superphos- phate, 1 cwt. Sulphate of Ammonia, 3 cwt. Kainit, ...	24 13	27 6	23 13	29 7	26 15	25 15	26 0	24 5
10 tons Farm- yard Manure, 4 cwt. Superphos- phate, 1 cwt. Sulphate of Ammonia, 4 cwt. Sulphate of Potash, ...	—	—	—	—	—	25 18	25 13	24 0

(2.) *Artificial Manures used alone.*

Manure.	Yield per Statute Acre in 1901.	Yield per Statute Acre in 1902.	Yield per Statute Acre in 1903.	Yield per Statute Acre in 1904.	Yield per Statute Acre in 1905.	Yield per Statute Acre in 1906.	Yield per Statute Acre in 1907.	Yield per Statute Acre in 1908.
	Tons Cwt. 4 10	Tons Cwt. 5 11	Tons Cwt. 2 2	Tons Cwt. 4 9	Tons Cwt. 9 3	Tons Cwt. 4 19	Tons Cwt. 4 13	Tons Cwt. 4 17
No Manure, ...								
4 cwt. Superphos- phate, ...	19 8	17 12	14 7	20 7	19 1	18 5	15 3	16 4
4 cwt. Superphos- phate, 1 cwt. Sulphate of Ammonia, ...	22 9	18 10	15 1	21 18	19 10	19 11	16 19	18 2
4 cwt. Superphos- phate, 1 cwt. Sulphate of Ammonia, 3 cwt. Kainit, ...	23 14	23 5	18 6	24 18	22 7	22 16	19 19	20 18
6 cwt. Superphos- phate, 1½ cwt. Sulphate of Ammonia, 4½ cwt. Kainit, ...	—	—	—	—	—	25 1	22 14	23 16
2 cwt. Superphos- phate, ½ cwt. Sulphate of Ammonia, 2 cwt. Kainit, 2 cwt. Dissolved Bones, 1 cwt. Bone Flour, ...	24 8	23 13	19 9	25 3	22 14	—	—	—

7 tons per acre more than that on Plot 4 indicates that in some cases the heavier application is a profitable one.

B.—MANURIAL TEST (New Series).

In 1908 further experiments were carried out with a view to testing the following points:—

(1.) The effect of an increased dressing of superphosphate as compared with the dressing of 4 cwt. per statute acre previously recommended (*a*) in combination with farmyard manure, and (*b*) in combination with other manures containing nitrogen and potash.

(2.) The effect of basic slag as compared with superphosphate when used in conjunction either with farmyard manure or with other manures containing nitrogen and potash.

Two series of experiments were therefore conducted:—In Table III. (pp. 338-339) will be found the results of the trials in which the two phosphatic manures were used together with farmyard manure, and in Table IV. (pp. 340-341) those where the complete mixture of artificials was used alone.

It will be seen from Table III. that the average value of the crop per statute acre, after deducting the cost of manures, is, from Plot 2, 2s. 7d., and from Plot 3, 8s. 4d., greater than from Plot 1. The returns, however, vary greatly at the different centres, there being in some cases a higher return from Plots 2 and 3, as compared with Plot 1, than is shown by the average results, while in others the increased dressing had no effect whatsoever.

The average returns from the use of basic slag are slightly lower than from the use of superphosphate, but here again the results at individual centres are conflicting.

In the portion of the experiment in which artificial manures only were used the average results show so little variation that no definite conclusion can be drawn as to the superiority of any one mixture over the others.

C.—VARIETY TEST.

The object of this experiment was to test the cropping capabilities of different varieties of swedes and yellow turnips.

The experiment was conducted on eighteen farms in Counties Antrim, Carlow, Donegal, Fermanagh, Kerry, Kildare, Kilkenny, Mayo, Monaghan, and Wexford.

The first nine varieties on the list are swedes and the rest are yellow turnips. The figures referring to each centre, together with the average results obtained with all varieties tested in the past seven seasons, will be found on Table V., pp. 342-343.

VII.—WHEAT.

The experiments in Wheat cultivation carried out during the past season consisted of the two following series:—

SERIES I.—LARGE SCALE EXPERIMENTS.

The varieties tested in this series were Square Head Master, Red Fife, White Queen, and White Stand Up. Each plot was 2 acres in extent, and the centres were situated as follows:—Two in Counties Carlow and Kildare, three in County Dublin, and one in Counties Tipperary and Cork. The produce of the plots from six centres was submitted to milling tests, which were carried out by various members of the Irish Millers' Association.

SERIES II.—SMALL SCALE EXPERIMENTS.

These were conducted by the respective Agricultural Itinerant Instructors in the following counties:—Carlow, Cavan, Cork, Dublin, Kildare, King's County, and Tipperary. In addition to the four Wheats tested in Series I. the following varieties were submitted to field trials:—Red Stand Up, Red King, and Browick's Grey Chaff.

The size of the plots varied from one-eighth to one-quarter of an acre.

SERIES I.—The following TABLE shows in each CENTRE the name of the EXPERIMENTER, the character of the SOIL and SUBSOIL, and its PREVIOUS TREATMENT.

Name of Centre.	Experimenter.	Character of Soil and Subsoil.	Previous Treatment of Land.
CO. CARLOW. (1) Tullow, ..	T. S. Malone, ..	Good deep Loam. Subsoil, Yellow Clay and Limestone Gravel.	1906.—Roots. 1907.—Barley.
(2) Bagenalstown, .	T. Tennant, ..	Good deep Loam. Subsoil, Limestone Gravel,	1906.—Oats. 1907.—Roots, with Farmyard Manure.
CO. CORK. (3) Midleton, ..	P. Kelleher, ..	Deep Loam. Subsoil, Yellow Clay and Gravel,	1906.—Oats. 1907.—Roots, with farmyard manure and artificials.
CO. DUBLIN. (4) Glasnevin, ..	Albert Agricultural College.	Strong Loam. Subsoil, Yellow Clay,	1906.—Oats. 1907.—Roots, with farmyard manure.
(5) Cloghran, ..	C. Dodd, ..	Good deep Loam. Subsoil, Gravelly Clay.	1906.—Wheat. 1907.—Roots, with farmyard manure and artificials.
(6) Clondalkin, ..	J. J. Lawlor, ..	Strong Loam. Subsoil, Yellow Clay,	1906.—Ley. 1907.—Potatoes.
CO. KILDARE. (7) Athy, ..	H. Hosie, ..	Strong Loam. Subsoil, Clay,	1906.—Ley. 1907.—Ley.
(8) Magency, ..	R. K. Wright, ..	Deep Loam. Subsoil, Yellow Clay and Gravel,	1906.—Oats. 1907.—Roots, with farmyard manure and artificials.
CO. TIPPERARY. (9) Birr, ..	J. Willington, ..	Strong Loam. Subsoil, Gravelly Clay,	1906.—Barley. 1907.—Roots, with farmyard manure and artificials.

**SERIES I.—TABLE SHOWING THE RETURNS PER STATUTE ACRE
FROM EACH CENTRE.**

Centre.			White Stand Up.	White Queen.	Square Head Master	Red Fife.
Co. CARLOW. T. S. Malone, Tullow.	.. Good ..		cwt. qrs. 24 0½	cwt. qrs. 21 3½	cwt. qrs. 23 1½	cwt. qrs. 14 3½
	Screenings		1 1½	2 1½	1 0½	2 1
	Total ..		25 2	24 0½	24 1½	17 0½
T. Tennant, Bagenalstown.	.. Good ..		40 1½	35 1½	30 3½	27 2
	Screenings.		0 2½	0 1	0 1	1 1
	Total, ..		40 3½	35 2½	40 0½	28 3
Co. CORK. P. Kelleher, Midleton.	.. Good, ..		32 3	26 3	36 1	21 0
	Screenings.		0 3½	0 2½	1 1½	0 2½
	Total, ..		33 2½	27 1½	37 2½	21 2½
Co. DUBLIN. Albert Agricultural College, Glasnevin.	Good, ..		27 2	28 3	32 2	22 2
	Screenings.		1 3½	2 2	2 2	3 3
	Total, ..		29 1½	31 1	35 0	26 1
C. Dodd, * Cloghran.	.. Good, ..		25 3	22 0½	26 1 ½	17 2
	Screenings.		0 1½	0 2½	0 3½	1 0½
	Total, ..		26 0½	22 3	27 0½	18 2½
J. J. Lawlor, Clondalkin.	.. Good, ..		25 1	24 2½	27 2	23 1½
	Screenings.		1 2	1 1½	1 1½	0 3½
	Total, ..		26 3	26 0½	28 3½	24 0½
Co. KILDARE. H. Hosie, Athy.	.. Good, ..		18 2½	18 2½	19 1½	13 0½
	Screenings.		0 3½	1 1	1 0½	0 2
	Total, ..		19 1½	19 3½	20 1½	13 2½
R. K. Wright, Magency.	.. Good, ..		30 1½	24 3½	30 3½	20 0
	Screenings.		0 2½	1 2½	0 3½	0 2½
	Total, ..		30 3½	26 2½	31 3	20 2½
Co. TIPPERARY. J. Willington, Birr.	.. Good, ..		21 0½	20 0½	18 2½	16 1
	Screenings.		0 2½	0 1½	1 0½	1 0
	Total, ..		21 3½	20 2	19 3½	17 1
Average Yield of Good Corn,			27 1	24 3	28 1	19 2½
Average Yield of Total Crop,			28 1	26 0	29 1½	20 3½
Percentage of Screenings, ..			3·5	4·8	3·9	6·3
Average Yield of Good Corn, in barrels of 20 stones, ..			brls. stns. 10 18½	brls. stns. 9 16½	brls. stns. 11 6½	brls. stns. 7 15½

SERIES II.—SMALL

TABLE SHOWING THE RETURNS PER

Name and Address of Farmer.	County.	Character of Soil.	White Queen.		White Stand Up.	
			Grain.	Straw.	Grain.	Straw.
			cwt. qr.	cwt.	cwt. qr.	cwt.
H. P. Earl, Rathvilly,...	Carlow, ..	Medium loam .	28 3	—	29 3	—
Thos. Ward, Drumhurst, Cootehill,	Cavan, ..	Loam, ..	17 0	25	22 2	36
Jas. Moore, Tonnymacleduff,	Do., ..	Clay loam, ..	19 3	24	20 2	26
Agric. Station, Clonakilty,	Cork ..	—	33 3	59	35 2	56
Michael Kelleher, Knockmonlea, Youghal,	Do., ..	—	20 2	—	30 2	—
R. H. Sneyd, The Forest, Swords,	Dublin, ..	Loam, ..	26 2	—	16 3	—
J. Jolley, Kiltalown, Tal- laght,	Do., ..	Light Loam, ..	19 1	34	23 2	30
Mrs. Moran, Ballysax, Curragh,	Kildare, ..	Loam, ..	28 1	—	24 1	—
E. P. O'Brien, Edenderry,	King's Co., ..	Sandy loam, ..	26 1	43	24 2	38
E. Perry, Belmout, ..	Do., ..	Clay, ..	20 1	75	26 0	60
W. B. Hayes, Sharavogue,	Do., ..	Sandy loam, ..	16 1	32	22 2	44
J. Wolfe, Rockfort, Nen- agh,	Tipperary, N.,	Loam, ..	15 1	22	21 1	20
R. English, Moonaloughre, Burncourt,	Tipperary, S.,	Clay loam, ..	28 3	50	30 2	50
T. Smyth, Marl Hill, Ardfinnan,	Do., ..	Sandy loam, ..	25 0	36	27 1	36
Average yield per statute acre, ..			23 1	40	25 1	40
Average yield per statute acre, in barrels of 20 stones, ..			bl. st. 9 4	—	bl. st. 10 2	—

SCALE EXPERIMENTS.

STATUTE ACRE FROM EACH CENTRE.

Square Head Master.		Red Fife.		Browick's Grey Chaff.		Red Stand Up.		Red King.	
Grain.	Straw.	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.
ewt. qr.	ewt.	ewt. qr.	ewt.	ewt. qr.	ewt.	ewt. qr.	ewt.	ewt. qr.	ewt.
26 3	—	*14 2	—	24 3	—	31 3	—	20 1	—
20 3	36	13 2	26	— —	—	14 0	29	—	—
22 3	22	14 1	21	22 2	26	21 0	25	17 1	21
32 2	56	20 2	70	31 0	54	30 3	49	30 2	53
17 0	—	14 0	—	16 3	—	19 3	—	13 3	—
26 0	—	18 2	—	22 0	—	19 2	—	14 3	—
25 3	42	15 0	25	14 3	40	22 3	33	22 3	31
30 1	—	18 1	—	28 3	—	30 2	—	30 0	—
22 3	43	18 0	41	21 2	45	20 2	41	25 2	48
22 1	60	17 1	55	22 0	65	24 1	65	18 0	65
16 3	37	12 1	29	17 3	42	18 3	31	15 3	26
23 2	24	*7 0	19	20 1	22	19 3	21	17 3	22
29 1	52	15 2	48	31 1	54	30 0	52	30 1	54
27 2	39	19 2	33	26 1	41	25 1	37	25 2	38
2 42	41	16 1	39	23 0	43	23 2	38	22 2	40
bl. st.		bl. st.		bl. st.		bl. st.		bl. st.	
9 18	—	6 9	—	9 4	—	9 2	—	9 0	—

* These plots were damaged by birds. Results not included in average.

REMARKS.

The results obtained from both series of experiments clearly indicate the superiority in yield of Square Head Master and White Stand Up over White Queen and Red Fife.

In point of quality, however, as demonstrated by milling tests, the Red Fife is considerably the best variety; next in value coming the White Queen, which is closely followed by the White Stand Up. Square Head Master, as milling material, is decidedly inferior to all the three above-mentioned varieties, and the flour produced therefrom very lacking in the quality known to millers as "strength."

The extremely unfavourable weather conditions during the harvest period were accountable for a large amount of waste at many centres, and, in addition, a loss in quality. It is intended to repeat the field and milling trials in 1909, when it is hoped that more definite conclusions may be drawn.

Judged from a commercial standpoint, the relative values per barrel of the four varieties, Square Head Master, White Queen, White Stand Up, and Red Fife, may, on the average of last autumn prices, be stated to be as follows:—

Square Head Master,	-	.	16/-	to	19/-	per barrel.
White Queen,	.	.	18/-	„	21/-	„
White Stand Up,	.	.	18/-	„	20/-	„
Red Fife,	.	.	20/-	„	22/-	„

As these trials have only been carried out for one season it is as yet too early to generalise or form any conclusion as to the most suitable varieties for cultivation. The requirements of local markets vary so considerably that it is necessary that these should be studied by wheat growers, and while making every effort to grow the most productive variety, the question of quality should not be overlooked, as the ready sale of the crop is to some extent affected thereby.

DRESSING OF WHEAT SEED FOR THE PREVENTION OF SMUT.

The presence of Smut in a crop of Wheat not only involves a loss to the farmer in yield, but also exerts a decidedly detrimental effect on the quality of the produce. It is therefore extremely desirable to adopt some precautionary methods for the prevention of the disease. One of the simplest of these is to dress the seed before sowing with Copper Sulphate solution in the following manner:—Dissolve $\frac{1}{2}$ lb. of Copper Sulphate in 1 gallon of water,

which quantity of solution is sufficient to dress 20 stones of wheat. The corn should be spread out on a clean loft floor, and the solution may then be carefully sprinkled over it, and the whole repeatedly turned until each grain receives a coating of the liquid. When this is done the wheat should be spread out in a thin layer and left to dry. If necessary it may be turned again. The operation should be carried out just immediately previous to sowing, and under no consideration should an attempt be made to sow the wheat before it is absolutely dry.

Copies of these Reports in leaflet form (Nos. 36 to 41 and 61) may be obtained free of charge, and post free, on application to the Secretary, Department of Agriculture and Technical Instruction for Ireland, Upper Merrion-street, Dublin. Letters of application so addressed need not be stamped.

OFFICIAL DOCUMENTS.

I. AGRICULTURE.

DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND.**A NEW AND DESTRUCTIVE POTATO DISEASE.**

The Department have lately received information to the effect that the disease in potatoes known as Black Scab has made alarming progress in England this season. The disease is a most serious one, resulting, in bad cases, in the total loss of the potato crop, and when once established it is almost impossible to eradicate. The danger of its introduction into the country at the present time is undoubtedly very great, and the question of preventing the disease from gaining a foothold here is, therefore, one which demands the immediate attention of all concerned.

With this object in view, the Department have just issued the Black Scab in Potatoes (Ireland) Order, 1908, which makes it compulsory on every person having potatoes affected, or suspected of being affected, with disease to notify the fact to the Department. The Order also prohibits, under heavy penalty, the landing in Ireland of any diseased tubers. Copies of the Order, as well as of the Department's Leaflet, No. 91 (illustrated), which describes the disease, may be obtained, free of charge, on application to the Department.

It is hoped that growers and salesmen will co-operate with the Department in this matter by keeping a strict look-out for the first appearance of Black Scab, and that every effort will be put forth to keep the country free from a disease which, once admitted, might, it is feared, prove even more destructive to the potato crop than the ordinary blight.

In this connection it is suggested that seed potatoes should not be purchased from Great Britain unless the vendors are prepared to give a guarantee that Black Scab was not known to exist on the farms on which the potatoes were grown.

October, 1908.

ORDER OF THE DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

Dated the First day of October, 1908.

BLACK SCAB IN POTATOES (IRELAND) ORDER, 1908.

The Department of Agriculture and Technical Instruction for Ireland, by virtue and in exercise of the powers vested in them under the Destructive Insects and Pests Acts, 1877 and 1907, do order, and it is hereby ordered as follows:—

Application of the Order.

1. This Order shall apply to the whole of Ireland.

Definitions.

2. In this Order—

“The Department” means the Department of Agriculture and Technical Instruction for Ireland.

“Disease” means the disease affecting potatoes, which is known as Black Scab, Warty Disease, or Potato Rosette, and caused by the fungus *Chrysophlyctis endobiotica* (Schilb).

“Diseased” means affected in any way with disease.

“Landing” includes introduction through the post.

“Authorised” means authorised by the Department.

“Approved” means approved by the Department.

“Potatoes” includes tubers growing, or grown, on a farm in Ireland, or obtained from any person or district outside of Ireland, as well as the haulms of such tubers.

“Packages” include boxes, sacks, and baskets.

Notification of Disease.

3. Every person having in his possession, or in his charge, any potatoes diseased or suspected of being diseased, shall forthwith notify the fact to the Department. Where practicable, a specimen tuber showing the disease, or suspected disease, shall accompany the notice.

Measures for the Prevention of the Spread of Disease.

4. (1.) On receiving in any manner notification of the existence, or supposed existence, of disease, an Inspector of the Department or other authorised officer shall take such steps as may be necessary to determine whether the disease exists, the area over which the disease exists, and the area to which it is likely to spread, and shall cause notice to be served on the occupier of any land

or premises within those areas requiring him to adopt such measures for the prevention of the spread of disease as are authorised by this Order.

(2.) The Notice under this Article shall require:—

- (i.) That all diseased tubers, and the haulms (if any) belonging thereto, as well as all packing material and packages at any time used for the storing or conveying of such potatoes, shall be immediately destroyed on the spot by burning or other effective method prescribed by the Department.
- (ii.) That no potatoes, or potato haulms, shall be removed, or be permitted to be removed, out of the area defined in the notice except with, and subject to the conditions (if any), of a licence signed by an Inspector of the Department or other authorised officer permitting such removal.
- (iii.) That potatoes shall not be again planted or sown on the affected land without the sanction of the Department.
- (iv.) That no affected soil shall be removed from one part of a farm either to another part of the same farm, or to another farm, whether within or without the affected area.

(3.) Every such notice shall remain in force until altered or withdrawn by the Department.

Importation of Potatoes.

5. It shall not be lawful to land in Ireland any potatoes diseased, or suspected of being diseased, brought from any place out of Ireland.

Powers of Entry.

6. An Inspector of the Department, or other authorised officer, may enter on any land or premises—

(1) On which he has reason to suspect that disease exists, or has recently existed, and examine any crop on such land or premises.

(2) On which potatoes are stored, or are kept, or are exposed for sale, for the purpose of examination and inquiry into the existence of disease therein, and may direct that any diseased potatoes shall be so disposed of as to eliminate all danger of the spread of disease therefrom. He may also require that the packages in which the diseased potatoes have been found or conveyed shall be immediately destroyed by burning. In addition to the foregoing powers, such Inspector or other authorised officer shall be at liberty in any case in which disease is suspected to exist to break bulk where necessary for the purpose of examination and inquiry into the existence of disease in any potatoes.

Penalties.

7. If any person

- (i) fails to give the notice required to be given by him under this Order ;
- (ii) fails to comply with any direction contained in a notice served on him under this Order ;
- (iii) knowingly lands in Ireland any potatoes diseased, or suspected to be diseased, brought from any place out of Ireland ;
- (iv) knowingly, or without reasonable excuse, sells or exposes for sale, or has in his possession or charge any diseased potatoes ;
- (v) wilfully obstructs or impedes an Inspector or other authorised person in the course of his duties under this Order ;
- (vi) fails to give to an Inspector or other authorised officer, or to the Department when required to do so, information as to the place of origin of any potatoes diseased, or suspected to be diseased ;

shall be liable, on conviction, to a penalty not exceeding Ten Pounds for each offence.

Execution of the Order.

8. For the purpose of this Order, a notice shall be deemed to have been served on a person if it is delivered to him at his last known place of abode or business, or sent through the post in a letter addressed to him there, and a notice or other document purporting to be signed by an Inspector or other authorised officer shall be *prima facie* evidence that it was signed by him and duly authorised.

Commencement.

9. This Order shall come into operation on the Second day of October, 1908.

Short Title.

10. This Order may be cited as "The Black Scab in Potatoes (Ireland) Order, 1908."

IN WITNESS WHEREOF the Department of Agriculture and Technical Instruction for Ireland have hereunto set their official seal this First day of October, 1908.

[L.S.]

T. P. GILL,
Secretary.

AGRICULTURAL EDUCATION.

The following Prospectuses, etc., have been issued. Copies may be had free on application to the Offices of the Department.

1. Horticultural School at the Albert Agricultural College, Glasnevin (Form A 153 (*a*)).
2. Agricultural Station, Ballyhaise, Co. Cavan (Form A 136 (*a*)).
3. School of Rural Domestic Economy, Swinford, Co. Mayo (Form A 135 (*h*)).
4. Poultry Fattening Apprenticeships (Form A 168 (*c*)).
5. Forestry Instruction (Form A 181 (*a*)).

II.—TECHNICAL INSTRUCTION.

Form S. 33.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET, DUBLIN.

ROYAL COLLEGE OF SCIENCE, DUBLIN.

SCIENCE AND TECHNOLOGICAL SCHOLARSHIPS, 1909.

A limited number of Scholarships and of Teacherships-in-Training, tenable at the Royal College of Science, Dublin, will be offered for competition among students of Science and Technology in 1909.

The Scholarships are of the value of £50 per annum, and, in addition, entitle the holder to free instruction during the Associate Course, and third-class railway fare for one journey each session to and from Dublin.

A Teachership-in-Training entitles the holder to free instruction during the Associate Course, a maintenance allowance of 21s. per week for the session of about forty weeks each year, and third-class railway fare for one journey each session to and from Dublin.

Candidates awarded Teacherships-in-Training will be required to enter into an undertaking that they will pursue the full Associate Course, with a view to becoming Teachers of Science in Ireland, and that, in the event of their leaving the College before obtaining the Diploma of Associateship, they will refund to the Department the sums paid to them as maintenance allowances and expenses of travelling.

The Associate Course extends over three years, and the College Session lasts from the beginning of October until the end of June each year.

Holders of Scholarships and Teacherships-in-Training will be required to devote their whole time to the work of the Associate Course, to comply with the regulations of the College, and to pass the examinations required for the Associateship. The continuance of the Scholarship or Teachership-in-Training for a second or a third session will depend upon the ability and application which the Student has shown during the previous session or sessions at the College.

Candidates for Scholarships and Teacherships-in-Training must be not less than sixteen nor more than thirty years of age on the 1st June, 1909. Holders of Royal Exhibitions or National Scholarships, and present or past students of the Royal College of Science, are ineligible as candidates.

Candidates must have been born in Ireland, or have been resident in Ireland for three years prior to the 1st June, 1909.

Candidates will have to satisfy the Department as to their knowledge of English and of one other language (Greek, Latin, Irish, French, or German). In these subjects a pass in the Middle Grade of the Intermediate Education Board's Examinations, in the First Arts Examination of the Royal University of Ireland, or the equivalent of these, will be accepted as satisfactory. Those candidates who cannot thus satisfy the Department as to their knowledge of the qualifying subjects will be examined on the Pass Courses for the Middle Grade of the Intermediate Education Board's Examinations of 1909.

The competition will be confined to Mathematics, Experimental Science, and Drawing.

The Syllabus in Mathematics will be the *Honours* Courses in Arithmetic, Geometry, Algebra and Trigonometry for the Senior Grade of the Intermediate Education Board's Examinations of 1909.

In Experimental Science, candidates will be allowed the choice of one of the following subjects of the Special Courses of Experimental Science of the Department's Programme for Day Secondary Schools:—Physics, Chemistry, Mechanical Science, Botany, Physiology and Hygiene. The examination may, however, include any of the work of the Two Year Preliminary Course.

The Syllabus in Drawing will be the First and Second Year Syllabuses of the Programme for Day Secondary Schools.

The examination will be held in Dublin on the days and at the hours shown below:—

Wednesday, 30th June.—English, 10 a.m.-1 p.m.; Greek, Latin, Irish, French or German, 2 p.m.-5 p.m.

Thursday, 1st July.—Mathematics, 10 a.m.-1 p.m.; Experimental Science (Written Examination), 2 p.m.-5 p.m.

Friday, 2nd July.—Experimental Science (Practical Examination), 10 a.m.-1 p.m.; Drawing, 2 p.m.-5.10 p.m.

Candidates must themselves bear any expenses incurred by them in connection with attendance at the examination.

NOTE.—Text Books, other than those referred to in the Syllabuses, are not prescribed for the examinations.

Scholarships or Teacherships-in-Training will not be awarded to candidates who do not show in the course of the examination that they are capable of taking full advantage of the instruction provided at the Royal College of Science. Candidates with physical defects of voice, sight, or hearing, will not be regarded as eligible for Teacherships-in-Training.

Successful candidates will be required to furnish a Medical Certificate of Health, an authenticated copy of Certificate of Birth and satisfactory testimonials from two responsible persons.

The Department reserve the right at any time to determine without notice a Scholarship or Teachership-in Training, upon being satisfied that its continuance is for any reason undesirable.

The decision of the Department in all questions arising in connection with the Scholarships and Teacherships-in-Training shall be final.

The Department do not undertake to employ Teachers, nor to find employment for them, at the close of the period of training.

Applications for admission to the examination must be made not later than the 30th April, on Form S. 34, copies of which may be obtained, after the 1st February, 1909, upon application to the Secretary, Department of Agriculture and Technical Instruction for Ireland, Upper Merrion-street, Dublin, or to the Registrar, Royal College of Science, St. Stephen's-green, East, Dublin.

Applications received after the 30th April will be too late for consideration. Applications for Forms are not regarded as applications for admission to the examination. Only those candidates who present an official acceptance of the Form of Application will be admitted to the Examination Room.

Form S. 125.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET, DUBLIN.

LOCAL SCIENCE AND ART EXAMINATIONS, 1909.

Regulations for the conduct of the Local Examinations in subjects of Science and Art held by the Department of Agriculture and Technical Instruction for Ireland on behalf of the Board of Education.

1. The examinations will be held in the evenings in May and June, and examinations in Freehand Drawing in Outline, and in Model Drawing, will be held in the day-time in June; the dates on which the examinations in the various subjects will be held are specified in the Examination Time Table, published separately.

Candidates may not present themselves for examination in Freehand Drawing in Outline, or in Model Drawing, at the evening examinations and at the day examinations in the same year.

Candidates may not present themselves for examination in more than one stage, or section of a stage, of any subject in the same year except in (a) Mathematics, in which subject they may take either one stage in each of the two groups of stages into which the examination in this subject is divided, or Honours in Division I. and Division II. of Mathematics; and (b) Agricultural Science and Rural Economy, in which subject they may take the examination in one of Sections A, B, C, and one of Sections D, E, and F of Stage 2. As Stage 1 of Subject VIII. (Sound, Light, and Heat) is common to the three sub-divisions into which the subject is divided for the advanced stages, candidates who take Stage 1 are not eligible to take, in the same year, Stage 2, Stage 3, or Honours of any of the three sub-divisions of the subject. When examinations are held concurrently in several subjects on the same evening, no candidate may take more than one of such subjects.

2. Examinations in Practical Chemistry (Subjects X_p. and XI_p.), and in Practical Metallurgy (Subject XIX_p.), are held only in laboratories equipped in accordance with the requirements appended to the Board of Education's Syllabuses for these subjects. Where the number of candidates for examination working at the same time exceeds the number for which the laboratory is approved, the candidates may be examined in divisions. Not more than two such divisions will be allowed, and the number of candidates in each division working at the same time must not exceed the number for which the laboratory is approved.

Practical examinations for candidates in Honours in certain subjects may be held at South Kensington, or at some other centre, in addition to a written examination. Such practical examinations will be held as early as possible in June or July. Candidates who are instructed to attend these examinations at South Kensington or any other centre, receive a subsistence allowance of 7s. 6d. a night while required to be absent from home, and third class railway fare; but no cab or omnibus fares are allowed.

3. The grades of success at the Examinations are "first class" and "second class."

Exceptions.—(1) In Section I. of Stage 1 of Science Subjects XV. and XXIII. there is only one grade of success, viz.: "pass."

(2) In the Art subjects of Drawing and Modelling from Life and Architectural Design there is a further grade of success, viz.: "excellent."

4. Applications for examination papers in Stage 1 of Science Subjects, and in Stage 1 of Design cannot be considered unless the application is accompanied by a sum of 1s. 6d. for each such paper asked for. For papers in Stage 1 of Practical Chemistry or Practical Metallurgy the fee will be 2s. 6d. per paper. No fee is exigible in respect of examinations in subjects of Art other than that in Stage 1 of Design.

The number of papers requisitioned cannot be subsequently varied, and no part of the remittance is returnable.

The remittance of the fee for papers in Stage 1 must be made by Bank Draft, Cheque, or Postal Order, made payable to "The Accountant, Department of Agriculture and Technical Instruction for Ireland." *Stamps cannot be accepted.*

5. Managers who wish their Schools to be made examination centres must make application to the Department not later than the 19th January on Form S. 101.

6. **External candidates** (*i.e.*, candidates who are not students of a school which is to be an examination centre) must apply not later than the 11th March to the Managers of a School where examinations in the subjects required will be held. A list of the centres at which examinations will probably be held will be issued early in February.

7. Managers may charge external candidates a fee not exceeding 2s. 6d. for each morning, afternoon, or evening for which they register their names for an examination. The admission of an external candidate to an examination in Practical Chemistry (Subject Xp. or XIp.), Practical Metallurgy (Subject XIXp.), Drawing from Life, Architectural Design, or Modelling, is not obligatory, and the above-mentioned limitation to the fee will not apply in the case of admission to the examinations in these subjects. These fees are additional to the fees payable to the Department.

8. Where managers of different institutions have classes in the same subject under their control they must arrange, where possible, for a conjoint examination of these classes in such manner that an unnecessary number of rooms may not be in use.

The Department will not, as a rule, arrange for examinations in Freehand Drawing in Outline, or in Model Drawing, at both the evening and the day examinations at the same centre.

9. A separate examination will not, as a rule, be held where the number of candidates to be presented in any one subject is less than four, but the Department will be prepared, when in such cases the school from which the candidates come is distant from any larger centre, to consider proposals for holding a separate examination at the school if special written application is made before the 27th February in the case of the evening examinations, and the 5th April in the case of the day examinations.

10. The accommodation provided should be as follows:—

(a.) For examinations in all subjects of Science and in all subjects of Art, except those mentioned in (b), the accommodation should be such as to allow of the candidates being seated not less than five feet apart from centre to centre. For examinations in subjects of Science it is desirable that rooms with level floors and without galleries should be used.

(b.) At examinations in the following subjects of Art:—Freehand Drawing in Outline, Model Drawing, Drawing in Light and Shade from a Cast, Drawing and Modelling from the Antique, Drawing and Modelling from Life, Modelling the Head from Life, and Painting from Still Life, candidates may be placed so as to be not less than two feet six inches apart from centre to centre.

11. Managers or their representatives must provide (for use in the examination in those subjects in which they are respectively

required), ink, pens, ruled foolscap paper, paper fasteners, tracing paper, and the necessary materials, such as stands, nails, &c., required for hanging up the casts for examination purposes in Drawing in Light and Shade and Modelling from the Antique.

12. Application for examination papers must be made to the Department not later than the **13th March** in the case of Evening Examinations, and not later than the **23rd April** in the case of Day Examinations. On this form the Managers will also be required to propose arrangements for the examinations.

13. The Managers will nominate, on Form S 107, certain persons prepared to superintend the examinations. The superintendents may either be voluntary superintendents, or they may be remunerated by the Managers, after notice to the Department, at a rate not exceeding 2s. 6d. per hour of attendance necessary: the Department would not, however, approve of Managers making payments for such services to members of their own body. Candidates for examinations, their relatives, their teachers, or other persons who have a direct interest in the success of any candidate are ineligible to act as superintendents of examinations. Managers are held entirely responsible for the presence of superintendents to the number required at each examination, otherwise the examination may be held to be void.

14. The examination papers and the materials supplied by the Board of Education for the examinations will be forwarded to the Examination Secretary.

The packets of examination questions must not, under any circumstances, be permitted to pass into the hands of a teacher, of a candidate for examination, or of any other person interested in the success of the candidates.

If the Examination Secretary is ineligible to act as Superintendent (see Section 13 above), the Managers must appoint some other responsible person to act as custodian of Examination Papers.

15. Detailed instructions for the conduct of the examinations will be addressed to the Secretary and to the persons nominated as Superintendents.

16. The Department will issue to the Secretary, blank cards of admission to the examinations, which must be distributed amongst the candidates. A candidate who is unable to produce the card of admission, may not, except in special circumstances, be admitted to the examination room.

17. The Department may disallow examinations which afford evidence of not having been conducted in strict accordance with the regulations; they will investigate cases of suspected irregularity, and may require any or all of the candidates to be re-examined. If any candidate should fail to appear at such investigation, or decline to be re-examined, all his previous examinations may be cancelled. When an examination has failed through no

[NOTE.—Copies of the Forms referred to herein may be obtained, after the 1st January, 1909, upon application to the offices of the Department.]

fault of the candidates, a re-examination may be allowed, the cost of which may be charged to the Managers. A re-examination will not be accepted for the purposes of Scholarships, &c.

18. All possible care is taken that the Examination Papers may be forwarded in accordance with the applications, and that the results may be issued correctly, but the Department cannot undertake to rectify mistakes, nor will they be responsible for any incidental loss.

Form S. 100.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET, DUBLIN.

LOCAL SCIENCE AND ART EXAMINATIONS, 1909.

Regulations respecting the Admission of External Candidates to the Local Examinations in Subjects of Science and Art, conducted by the Department of Agriculture and Technical Instruction for Ireland on behalf of the Board of Education.

(1.) The examinations will be held in the evenings in May and June, and examinations in Freehand Drawing in Outline, and in Model Drawing will be held in the day-time in June. The dates on which the examinations in the various subjects will be held are specified in the Examination Time Table, published separately.

(2.) Candidates may not present themselves for examination in Freehand Drawing in Outline, or in Model Drawing, at the Evening Examinations and at the Day Examinations in the same year. Candidates may not present themselves for examination in more than one stage, or section of a stage, of any subject of Science in the same year, except in (a) Mathematics, in which subject they may take either one stage in each of the two groups of stages into which the examination in this subject is divided, or Honours in Division I. and Division II. of Mathematics, and (b) Agricultural Science and Rural Economy, in which subject they may take the examination in one of Sections A, B, and C, and one of Sections D, E, and F of Stage 2. As Stage 1 of Subject VIII (Sound, Light, and Heat) is common to the three subdivisions into which the subject is divided for the advanced stages, candidates who take Stage 1 are not eligible to take, in the same year, Stage 2, Stage 3, or Honours of any of the three subdivisions of the subject. When examinations are held in several subjects of Science on the same evening, no candidate may take more than one of such subjects.

(3.) External candidates (*i.e.* candidates who are not students of a school which is to be an examination centre), must apply to the Managers

of a School where examinations in the subjects required will be held, not later than the **11th March** for admission to the Evening Examinations, and not later than the **21st April** for admission to the Day Examinations. A list of the centres at which examinations will probably be held will be issued early in February.

(4.) Managers may charge external candidates a fee not exceeding 2s. 6d. for each morning, afternoon, or evening for which they register their names for examination. The admission of an external candidate to an examination in Practical Chemistry (Subject Xp. or XIp.), Practical Metallurgy (Subject XIXp.), Drawing from Life, Architectural Design, or Modelling, is not obligatory, and the above-mentioned limitation to the fee will not apply in the case of admission to the examinations in these subjects. These fees are additional to the fees payable to the Department for papers in Stage I. of Science Subjects and Stage I. of Design. A sum of 1s. 6d. is charged by the Department for each such paper, except in the case of Stage I. of Practical Chemistry (Subject Xp. or XIp.), and Practical Metallurgy (Subject XIXp.) for which the fee is 2s. 6d. per paper.

(5.) External candidates must provide the materials required for examination in the particular subjects which they take, *e.g.*, Pens, Pencils, and in Art Subjects, Drawing Boards, T Squares, Instruments, Drawing Pins, Fasteners, &c.

Form S. 108.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET, DUBLIN.

I.—SPECIAL EXAMINATIONS FOR TEACHERS' QUALIFICATIONS IN EXPERIMENTAL SCIENCE.

The Department will hold, in 1909, special examinations for Teachers' qualifications in Experimental Science. Each examination will be divided into two portions, the first a written test to be held on Saturday, the 1st May, from 11 a.m. to 2 p.m., and the second a practical examination to be held subsequently on a date to be fixed by the Department, and which will be duly notified to candidates. Provisional recognition to give instruction in the First, Second, Third, or Fourth Year Syllabuses of the Department's Programme of Experimental Science for Day Secondary Schools, will be granted to those candidates who pass the examination.

The subjects of the Special Examinations will be :

- (1) First Year Syllabus of the Preliminary Course.
- (2) Second Year Syllabus of the Preliminary Course.

- * (3) Physics (those portions of the Syllabus dealing with General Physics, Heat, Wave Motion, Sound, and Light and Radiant Heat).
- * (4) Physics (that portion of the Syllabus dealing with Electricity and Magnetism).
- (5) Chemistry (Third Year Syllabus).
- (6) Chemistry (Fourth Year Syllabus).
- (7) Mechanical Science (Third Year Syllabus).
- (8) Mechanical Science (Fourth Year Syllabus).
- (9) Botany (Third Year Syllabus).
- (10) Botany (Fourth Year Syllabus).
- (11) Physiology and Hygiene (Third Year Syllabus).
- (12) Physiology and Hygiene (Fourth Year Syllabus).

The examination in any subject will be open only to those teachers in Secondary Schools who have received at least 100 hours' practical instruction in that subject within two calendar years previous to the date of the present examination. Before entering upon the course of instruction each Teacher must obtain, *in writing*, the Department's approval of the conditions under which such instruction is to be given.

Teachers who have made satisfactory attendance at the Summer Courses of Instruction conducted by the Department in 1907 and 1908, and who, as a result of the examination at the conclusion thereof, failed to secure a certificate, or obtained recognition to teach for one year only, will be admitted to the Special Examination in that subject without having to satisfy the Department as to attendance at further courses of instruction.

Candidates will not be permitted to sit for examination in more than one subject in any one year.

Should a sufficient number of applications for examination be received the Department will arrange to hold the written examination at Dublin, Belfast, Cork, Londonderry, Limerick, Waterford, and Galway, and, in very exceptional circumstances, other centres might be arranged for, provided that special written application is made by School Managers before the 27th February, 1909.

Application for admission to the examination must be made before the 27th February, 1909, on Form S. 118, copies of which may be obtained, after the 1st January, upon application to the offices of the Department.

**The Syllabuses of the examinations in Physics are those of the Third and Fourth Year Training Courses conducted by the Department in the summer of 1908. Candidates who pass the examination in the Third Year Training Course Syllabus will be provisionally recognised to give instruction in the Third Year Syllabus only of the Programme.*

II.—REGULATIONS UNDER WHICH THE DEPARTMENT ARE PREPARED TO RECOGNISE SPECIAL COURSES OF INSTRUCTION IN EXPERIMENTAL SCIENCE FOR TEACHERS IN DAY SECONDARY SCHOOLS.

The Instructor in charge of classes for Teachers must be specially qualified, and his qualifications must be approved of by the Department for the purposes of the Special Course of instruction.

The Laboratory must also be approved of by the Department for the purposes of the Special Course of instruction.

Special classes, conducted during the winter in a Technical School or central institution, other than Training Colleges, may be registered as Science classes, and grants earned according to the regulations and scale of payment set out in the Programme for Technical Schools and Science and Art Schools and Classes.

Attendance at theoretical instruction may not be taken into account when computing the 100 hours' practical instruction referred to in the third paragraph of Section 1 of this form.

Application for the recognition of special classes for Teachers *must be made by letter*, accompanied by detailed proposals upon Forms S. 54 and 59. Attendance at lessons previous to the receipt of the Department's written approval of the arrangements may not be reckoned as part of the 100 hours' practical instruction.

Form S. 176.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET, DUBLIN.

LOCAL SCHOLARSHIP EXAMINATIONS, 1909.

The following arrangements are proposed to be made by the Department for the conduct of examinations in connection with the award, in 1909, of Scholarships to be granted under schemes of technical instruction in operation in Counties and Urban Districts in Ireland.

The examinations are conducted free of charge to Committees; the Department undertake the preparation of examination papers and the revision of answers; and they issue lists of candidates in order of merit to the Committees concerned.

The Department will not be prepared to hold any examinations for Scholarships in 1909, other than those enumerated below.

Committees will be required to find Superintendents for the examinations, and to arrange for suitable accommodation.

I.

FOR SCHOLARSHIPS TENABLE AT DAY SECONDARY SCHOOLS.

On June 26th.—This examination will be suitable for the award of County and Urban District Scholarships tenable at approved Day Secondary Schools.

The subjects and time of examination will be :—

Arithmetic,	.	.	11 a.m. to 12.30 p.m.
English,	.	.	1 p.m. to 2.15 p.m.
Drawing,	.	.	2.30 p.m. to 3.30 p.m.
*Irish, or Mathematics,	.	.	3.45 p.m. to 5.15 p.m.

II.

FOR SCHOLARSHIPS TENABLE AT TRADES PREPARATORY SCHOOLS.

On June 24th.—This examination will be suitable for the award of Scholarships tenable at, and for entrance qualification to, Day Trades Preparatory Schools, working under the Department's Regulations

The subjects and time of examination will be :—

English	.	.	10 a.m. to 12 noon.
Arithmetic,	.	.	12.30 p.m. to 2.30 p.m.
Drawing,	.	.	2.45 p.m. to 4 p.m.

III.

FOR SCHOLARSHIPS TENABLE AT RESIDENTIAL SCHOOLS OF DOMESTIC ECONOMY.

On June 24th.—This examination has been arranged for the convenience of those Committees which have decided that such Scholarships shall be awarded as the result of a competitive examination. It will be suitable for the award of Scholarships tenable at, and for entrance qualification to, such Residential Schools of Domestic Economy as are working under the Department's Regulations.

The subjects and time of examination will be :—

Arithmetic,	.	.	10.30 a.m. to 12.30 p.m.
English (including General			
Knowledge),	.	.	1 p.m. to 3 p.m.
Drawing,	.	.	3.10 p.m. to 4.10 p.m.

SYLLABUSES OF EXAMINATIONS.

The Syllabuses of Arithmetic, English, and Drawing are the same for each of the examinations mentioned, but a higher standard of work will be looked for in the Trades Preparatory School Scholarship and Entrance Examination than in the other examinations.

Candidates may be examined on any part of these Syllabuses.

* In cases in which Committees have decided that the examination shall include Irish or Mathematics.

Arithmetic:

The principles of Vulgar and Decimal Fractions, with examples involving addition, subtraction, and multiplication.
 Proportion, Simple Interest, Practice, Unitary Method.
 The Metric System.
 Methods of Weighing and Measurement.
 Measurement of lengths, areas, and volumes.

English:

Composition. A short essay, or letter, of thirty or forty lines—with correct spelling, grammar, and punctuation—on some familiar subject.
 Ability to answer in fully formed sentences questions on the meaning of words and phrases, and on the matter of a passage read.
 Grammar. The construction of words: prefixes, affixes, and roots.
 Analysis of simple and complex sentences.
 Correction of faulty sentences.
 Paraphrasing a short poetical extract.

General Knowledge: (For Domestic Economy Scholarship Examinations.)

Questions on familiar subjects which a pupil would be expected to be acquainted with from home or school life, and from general observation and reading.

Drawing:

1. Freehand Drawing.
2. Simple exercises in Design.
3. Model Drawing of Simple Common Objects.
4. Simple Geometrical Drawing.

Irish:

1. Taidbse an Chraimn. Tadg Gaba: with questions on grammar, &c., arising out of the texts.
2. A passage, or passages, from some other Irish text or texts for translation into English.
3. Short sentences, colloquial phrases and a short passage for translation from English into Irish.

Mathematics:

Algebra. Problems involving simple and simultaneous equations, fractions, factors and square root.
 Euclid. Book I. with practical exercises on the problems.
 Practical Geometry. Mensuration of rectilinear figures from diagrams drawn to scale.
 Pupils will be required to draw and measure simple geometrical figures accurately.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET,
DUBLIN, *November, 1908.*

SIR,—In dealing with the claims made by the Managers of Technical Schools and Science and Art Classes for grants in respect of the instruction afforded during the past academic year, the Department have observed that in several particulars their intentions in regard to the payment of grants in respect of the courses followed by students have not been understood. It has therefore been thought desirable to bring before the notice of Managers certain matters, attention to which may considerably affect the amount of the grants which may be earned in the current school session.

The Department when formulating their Regulations for Technical Schools and Science and Art Schools and Classes did not prescribe any syllabuses to be followed by classes working under Sections II. and III., it being considered that in many cases local circumstances would require the adoption of special syllabuses, and that the teachers of the classes would, in view of their knowledge of the localities, be the best judges of the requirements of the students. The Department's hopes have in many cases been realised, and satisfactory syllabuses have been drawn up setting out the work to be done in the various subjects in the different years of specialisation. In a large number of instances, however, the teachers have adhered to the syllabuses prescribed by recognised examining bodies, with results which are, in some respects at least, unsatisfactory. Certain syllabuses published by the Board of Education, the City and Guilds of London Institute, and the Royal Society of Arts, have been found too comprehensive to be mastered in one school session by students adopting courses consisting of two or three subjects, and, in these circumstances, it has frequently been found necessary to enter the students in the same class for a second school session, and thereby grants at the rates for the higher years of specialisation have been forfeited. Having regard to these facts the Department are of opinion that Managers should carefully reconsider the courses of instruction provided in order to ensure that the syllabuses for each year will be such that a pupil of average ability will, after a normal session's work, pass to a more advanced class. Separate registers should be kept for the classes in each syllabus, and the year of syllabus followed entered in the space provided for the purpose on the cover of the form.

Again, it has been noticed that certain students have attended classes in two or more subjects which could not be regarded as forming satisfactory courses, and in this connection it should be noted that the Department will not be prepared to accept for the purposes of grants any courses not included in the arrangements which have been approved in writing from these offices.

In regard to the admission of students to the first year of specialisation under Section II. 4 (c) of the Regulations, it will be necessary to produce for the information of the inspector, documentary evidence of the student's standard of education. To meet this requirement it will probably be found desirable to hold an entrance examination. The subjects of this examination should include English, Arithmetic, and one other subject, and the papers worked by the candidates should be marked and retained on the school premises.

I am, Sir,

Your obedient servant,

T. P. GILL,

Secretary.

Circular 59.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET,
DUBLIN, *December, 1908.*

TRAINING OF NATIONAL SCHOOL TEACHERS TO GIVE INSTRUCTION IN ELEMENTARY EXPERIMENTAL SCIENCE.

Sir,—The Department of Agriculture and Technical Instruction have had under consideration the terms of their Circular Letter, No. 27, of August, 1903, relative to the agreement arrived at between the Department and the Commissioners of National Education for providing means for the training of National School Teachers in Elementary Experimental Science as part of local schemes of Technical Instruction. Revised regulations for the conduct of courses specially organised for providing such training are printed as an Appendix to this Circular Letter. These Regulations have received the concurrence of the Commissioners of National Education, who are prepared to accept the certificates of satisfactory attendance referred to at Section 13 of the Appendix as evidence of qualification to give instruction in Elementary Experimental Science in National Schools.

It will be observed that the principal change in the Regulations is the extension of the course by the addition of a third year course in Rural Economy.

Classes, which it is desired should be conducted under the terms of this Circular Letter, must follow the syllabuses of instruction prescribed.

I am,

Sir,

Your obedient servant,

T. P. GILL,

Secretary

The Secretaries of
Technical Instruction Committees.

APPENDIX A.

REGULATIONS FOR THE CONDUCT OF COURSES OF INSTRUCTION IN
ELEMENTARY EXPERIMENTAL SCIENCE FOR NATIONAL SCHOOL
TEACHERS.

1. The subject of instruction to be called Elementary Science (Teachers).

2. The course will be a three years' course. The syllabuses of instruction to be followed are as stated below, and must be taken up in the order prescribed:—

First Year.—The First Year's Syllabus of the Preliminary Course of Experimental Science of the Department's Programme for Day Secondary Schools; or the First Year's Syllabus in Elementary Science and Object Lessons of the Programme for King's Scholars.

Second Year.—The Second Year's Syllabus of the Preliminary Course of Experimental Science of the Department's Programme for Day Secondary Schools; or the Final Year's Syllabus in Elementary Science and Object Lessons of the Programme for King's Scholars.

Third Year.—The Syllabus in Rural Economy printed on pp. 371-372.

3. The class to meet under the instruction of a qualified teacher, and be registered on at least 28 days within the academic year.

4. The class lessons to be of at least two and a half hours' duration; at least one and a half hours being devoted to practical work. Such lessons (of two and a half hours each) not to be registered on more than two days in any one week.

5. In other respects the instruction to be conducted in accordance with the conditions of the Department's Programme for Technical Schools and Science and Art Schools and Classes.

6. Classes recognised by the Department under these Regulations will be eligible for grants under the conditions of Section VI. of the Programme for Technical Schools and Science and Art Schools and Classes.

7. The classes will not be permitted to exceed twenty teacher-students on the roll for one qualified instructor, nor to exceed thirty for one qualified instructor and one recognised assistant.

8. The Department will require to be satisfied that the accommodation and equipment provided for these classes is suitable and sufficient.

9. Every teacher-student will be required to perform all the practical exercises prescribed in the course of instruction, and to produce fair written notes of the instructor's demonstrations and of his own practical work. These notes must be examined at regular intervals by the instructor.

10. The instructor will be required to devote special attention to the educational aims of the work; and to the means of overcoming the difficulties likely to be encountered in dealing with this subject in Primary Schools.

11. The instructor will be expected to make, as occasion requires, suggestions as to the treatment of simple object lessons.

12. Regularity and punctuality of attendance will be regarded as essential. The certificate referred to in Section 13 below will not be issued to teacher-students who have not been registered as present at, at least, twenty-one lessons. It is necessary that these attendances should have been made previous to the date of the special inspection referred to in Section 13 (c).

13. At the close of each session the Department will issue certificates of satisfactory attendance to all teacher-students who have—

- (a) made the required number of attendances;
- (b) worked satisfactorily through the prescribed course; and
- (c) been present at the special inspection, and have attained a sufficient standard in any practical, *viva voce*, or written examination which it may be considered desirable to hold.

14. These certificates will be accepted by the Commissioners of National Education as evidence of qualification to give instruction in the subject, or subjects, inscribed thereon.

15. The qualifications of the instructors and assistants must be submitted to and approved by the Department before the arrangements for the course of instruction are completed.

16. Applications for sanction to conduct classes in Elementary Science (Teachers) must be made on Form S. 54.

APPENDIX B.

SYLLABUS OF THE COURSE OF INSTRUCTION IN RURAL ECONOMY.

I. *The School and its Surroundings.*

North and South. The Compass-Needle. The School as the centre of a local map. The School as a point on the surface of the globe.

II. *The Atmosphere and the Weather.*

Temperature and the registering thermometer. Winds and the barometer. Rain fall and the rain gauge. Local and general conditions of climate.

III. *Plant Life in the District.*

How to recognise the common plants.

IV. *The Highlands.*

Height above the sea level. Cloud caps and snow. Action of frost and rain. Down wash of fine material. Glaciers of ancient days and their deposits. Vegetation of the hill-slopes and upland fields.

V. *The Local River System.*

Rain grooves and springs. Material carried visibly and invisibly. Regions of cutting and deposition. Estimate of the work of the river in wearing away the land.

VI. *The Lowlands and the Shore.*

Relations of plains and highlands. Effect of earth movement on the lowland rivers and on the shore line. The battery of the sea. Sand-dunes. Vegetation of dunes, links, and salt-marshes.

VII. *The Making of Rocks.*

Granite, sandstone, clay, and limestone. Remains of plants and animals in the rocks.

VIII. *The Soil and the Plant.*

The physical and chemical attack of nature on the rocks. The soil in relation to air and water. Germination of seeds. The root and the soil. Materials absorbed by roots. Farm-yard manure and artificial manure. Effects of tillage.

IX. *The Growth of the Plant.*

The plant above the ground. Stems. The flow of sap. Growth of timber, buds. Leaves and the work they do. Storage of plant food. The potato. Bulbs and corms. Insect pests.

X. *Flowers, Fruits, and Seeds.*

How pollen is distributed by wind and animals. Setting of the seed. Ripening. Dispersal of fruits and seeds.

XI. *Non-flowering Plants.*

Bracken and Peat. Parasitic plants; potato blight; oat-smut; "Finger and toe." Micro-organisms and their work, harmful and beneficial.

XII. *The Common Animals of the Farm.*

Their general structure as related to their life and work.

XIII. *Interdependence of Plant and Animal Life, and of both on Geographical Surroundings.*

Animal residents and migrants. Local life and occupations as controlled by the natural conditions of the district,

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET,
DUBLIN, *December, 1908.*

**TRAINING OF NATIONAL SCHOOL TEACHERS TO GIVE
INSTRUCTION IN DOMESTIC ECONOMY.**

SIR,—The Department of Agriculture and Technical Instruction for Ireland have been in communication with the Commissioners of National Education on the subject of the Training of National School Teachers to give instruction in Domestic Economy in National Schools, and an agreement has been arrived at whereby, in accordance with the regulations set forth in the appendix to this Circular Letter, the Department are prepared to approve of provision being made for such training as part of local schemes of Technical Instruction, and to issue certificates of satisfactory attendance at the courses of instruction. On the same conditions, the Commissioners of National Education are prepared to recognise teachers who hold certificates of satisfactory attendance as qualified to give instruction in Domestic Economy in National Schools.

The Department will be glad if, when bringing this matter before your Committee, you will direct their special attention to paragraph 13 of Appendix A., from which it will be seen that the qualifications of the Instructresses who are to undertake this work must be submitted to and approved by the Department before the arrangements for the course of instruction are completed. It should be fully understood that unless this condition is strictly complied with, the Department will not approve of the course nor issue the certificates.

I am, Sir,

Your obedient servant,

T. P. GILL,

Secretary.

The Secretaries of
Technical Instruction Committees.

APPENDIX A.

**REGULATIONS FOR THE CONDUCT OF COURSES OF INSTRUCTION IN
DOMESTIC ECONOMY FOR NATIONAL SCHOOL TEACHERS.**

1. The course will be a three years' course. The syllabuses of instruction to be followed are given below (Appendix B), and must be taken up in the order prescribed.

2. The class to meet under the instruction of a qualified teacher and be registered on at least twenty-eight days within the academic year.

3. The class lessons to be of at least two and a-half hours' duration; at least one and a-half hours being devoted to practical work. Such lessons (of two and a-half hours each) not to be registered on more than two days in any one week.

4. In other respects the instruction to be conducted in accordance with the conditions of the Programme for Technical Schools and Science and Art Schools and Classes.

5. Classes recognised by the Department under the term of this Circular Letter, will be eligible for grants under the conditions of Section II. of the Programme for Technical Schools and Science and Art Schools and Classes. Such Classes will be regarded as Evening Classes irrespective of the hour of the day at which they meet.

6. The classes will not be permitted to exceed twenty teacher-students on the roll for one qualified Instructress, nor to exceed thirty for one qualified Instructress and one recognised Assistant.

7. The Department will require to be satisfied that the accommodation and equipment provided for these classes is suitable and sufficient.

8. Every teacher-student will be required to perform all the practical exercises prescribed in the course of instruction, and to produce fair written notes of the Instructress's demonstrations and of her own practical work. These notes must be examined weekly by the Instructress.

9. The Instructress will be required to devote special attention to the educational purposes of the work; and to the means of overcoming the difficulties likely to be encountered in dealing with the subject in primary schools.

10. Regularity and punctuality of attendance will be regarded as essential. The certificate referred to in Section 11 will not be issued to teacher-students who have not been registered as present at, at least, twenty-one lessons. It is necessary that these attendances should have been made previous to the date of the special inspection referred to in Section 11 (c).

11. At the close of each Session the Department will issue certificates of satisfactory attendance to all teacher-students who have

(a) made the required number of attendances:

(b) worked satisfactorily through the prescribed course; and

(c) been present at the special inspection, and have attained a sufficient standard in any practical, *viva voce*, or written examination which it may be considered desirable to hold.

12. Teachers who hold certificates of satisfactory attendance at a course of instruction in the first year's Syllabus will be recognised by the Commissioners of National Education as qualified to

give instruction in Cookery (first year's course) and in Laundry work in National Schools, and those who hold certificates of satisfactory attendance at courses of instruction in the first and second years' Syllabuses will be recognised as qualified to give instruction in the full course of Domestic Economy in National Schools.

13. The qualifications of Instructresses and assistants must be submitted to and approved by the Department before the arrangements for the course of instruction are completed.

14. Applications for approval to conduct classes in Domestic Economy must be made on Form S. 262.

APPENDIX B.

SYLLABUSES OF THE COURSES OF INSTRUCTION IN DOMESTIC ECONOMY FOR NATIONAL SCHOOL TEACHERS.

First Year Syllabus.

(A) COOKERY AND HOUSEHOLD KNOWLEDGE.

Classification of foods with their respective values. Diets suitable for various types of people, and complete menus for families. Economy in cookery, including fuel. General Principles of cookery. Use of the thermometer and effects of heat on various substances. Management and cleaning of ranges, stoves, grates, and open hearths. Cleaning and care of all utensils and general scullery work. •

Personal hygiene—Simple instruction on digestion, respiration and blood circulation. The importance of cleanliness, fresh air, and good habits. The salient facts in connection with the conditions essential to healthy existence.

DISHES.

Soups—Lentil Soup, Potato Soup, Pea Soup, Cabbage Soup, Scotch Broth, Soup Maigre.

Fish—Fried and Boiled Fish, Fish Cakes, Kedgeree, Stewed Ling, Potted Herrings.

Meat—Roast and Boiled Mutton, Fried Liver and Bacon, Exeter Stew and Savoury Balls, Irish Stew, Cottage Pie, Beefsteak Pudding, Hashed Meat, Sausage Rolls, Stewed Rabbit, Sea Pie, Fried Sausages, Boiled Bacon.

Vegetables—Potatoes—Boiled, Steamed, Fried, Baked, Mashed and Roasted; Boiled Cabbage, Boiled Cauliflowers, Boiled Carrots, Boiled Turnips, Boiled Haricot Beans, Boiled Onions with White Sauce, Boiled Parsnips.

Puddings, etc.—Bread Pudding, Baked and Steamed; Suet Pudding, Steamed Batter Pudding, Roly Poly, Rice, Sago, and Tapioca Puddings; Cornflour Mould, Stewed Fruit, Apple Dumplings, Boiled Rice and Stewed Prunes, Oatmeal Pudding, Indian Meal Pudding.

Invalid Cookery—Beef Tea, Gruel, Lemonade, Steamed Fish, Steamed Chops, Treacle Posset, Barley Water, Toast.

Bread and Cakes—Brown and White Bread, Currant and Seed Loaf, Soda Scones, Oatmeal Biscuits, Gingerbread, Milk Rolls, Currant Buns.

Sundries—Fried Bacon and Eggs, Tea, Coffee, Cocoa, Porridge, Boiled Eggs, Buttered Eggs, Stock making.

(B)—LAUNDRY WORK.

(Not less than ten lessons of two and a-half hours' duration each must be given in this subject. Certificates of satisfactory attendance will not be granted to teachers who have not attended at least eight of the lessons.)

Water—Soft and hard. Materials used in laundry work, and their uses. Materials to avoid as injurious. Advantages of Home washing. Hand washing *versus* Machine washing. Description of various processes. Bleaching. Disinfecting. Removal of stains, and mending of worn garments. Sorting of clothes before washing. Preparation for washing day. Paraffin Washing.

WASHING AND MAKING-UP.

All household and personal linen. Flannel and woollen garments, shawls, &c. Prints. Muslin and lace curtains. Collars and cuffs. Men's shirts. Blouses—print and silk. Crochet and other laces. Embroidered articles. Cleaning of gloves, boots and shoes.

Second Year Syllabus.

COOKERY AND HOUSEHOLD KNOWLEDGE.

Household accounts and allocation of income. Care of the house. Detection of adulteration of foods. Cooking of complete dinners. Care of the larder and preservation of food. Feeding of infants and children. Infantile ailments and their treatment. Infectious diseases—what a housewife needs to know in regard to them. General household management.

DISHES.

Soups—Tomato Soup, Brown Soup, Onion Soup, Carrot Soup, Milk Soup.

Fish—Baked Haddock, Baked Cod, Fish Croquettes, Fish fried in Batter, Fish fried with Egg and Bread Crumbs, Fish Pudding.

Meat—Roast Beef, Beefsteak Pie, Cornish Pasties, Stewed Steak and Vegetables, Minced Meat and Mashed Potatoes, Risssoles, Meat Balls, Grilled Chop, Roast Chicken, Boiled Chicken, Stewed Sheep's Heart, Mutton—Stuffed and Baked; Hot Pot, Sheep's Head and Broth.

Vegetables, etc.—Potato Croquettes, Potato Balls, Potato with White Sauce, Brussels Sprouts, Stewed Celery, Baked Onions, Baked Tomatoes, Dried Peas.

Puddings—Plain Plum Pudding, Fig Pudding, Pancakes, Omelet, Apple Pie, Rice Mould, Rhubarb Mould, Treacle Pudding, Jam Tart, Sago Blancmange.

Invalid Cookery—Custard Pudding, Steamed Cup Custard, Poached Egg, Egg Flip, Egg Snow, Egg Jelly, Cup of Arrow-root, Linseed Tea, Invalid Cake, Milk Jelly.

Bread and Cakes—Brown and White Bread, Potato Cakes, Drop Scones, Rock Cakes, Parkins.

Sundries—Clarified Fat, Macaroni Cheese, Rice and Cheese, Baking Powder, Boiled Rice for Curry.

Third Year Syllabus.

COOKERY, HOUSEHOLD MANAGEMENT, AND HYGIENE.

Revision of work done in Hygiene in previous Sessions. Choice, selection, and care of Clothing. Simple Lessons on First Aid to the Injured and Home Nursing of the Sick.

DISHES.

Soups—Julienne Soup, Rice Soup, Gravy Soup, Kidney Soup.

Fish—Plaice, Stuffed and Baked; Plaice à la crème.

Meat—Roast Lamb, Potted Beef, Boiled Tongue, Pork Pies, Boiled Rabbit, Fried Sheep's Kidneys, Tripe and Onions.

Vegetables—Potato Loaf, Chipped Potatoes, Stewed Celery, Cauliflower au gratin.

Puddings—Lemon Cream, Bachelor Pudding, Marmalade Pudding, Plain Trifle, Syrup Tart, Baked Apple and Currant Roly Poly.

Bread and Cakes—Lunch Buns, Wheaten Biscuits, Sultana Loaf, Swiss Roll.

Sundries—Making of Preserves, Various Sauces, Irish Moss Jelly.

NOTES AND MEMORANDA.

A meeting of the Agricultural Board was held at the offices of the Department, Upper Merrion-street, Dublin, on Wednesday, the 25th November, 1908. The following were present:—The **Meetings of the Boards:—** Right Hon. T. W. Russell, M.P., P.C., Vice-President of the Department, in the chair; Mr. Alexander L. Clark, J.P.; Very Rev. Canon Daly, D.D.; Mr. Robert Downes, J.P.; Colonel N. T. Everard, H.M.L.; Sir Josslyn Gore-Booth, Bart., D.L.; His Grace Most Rev. John Healy, D.D., Lord Archbishop of Tuam; Mr. William M'Donald, J.P.; The Right Hon. Lord Monteagle, K.P., D.L.; Mr. H. de F. Montgomery, D.L.; Mr. P. J. O'Neill, J.P.; and Mr. Alexander Robb, J.P.

Mr. T. P. Gill, Secretary of the Department; Mr. J. R. Campbell, B.Sc., Assistant Secretary in respect of Agriculture; Mr. R. Cantrell, I.S.O., Chief Clerk; Mr. W. G. S. Adams, M.A., Superintendent of the Statistics and Intelligence Branch; Mr. J. S. Gordon, B.Sc., Chief Agricultural Inspector; Mr. J. P. Walsh, Clerk in Charge of Accounts; Mr. J. D. Daly, M.A. (who acted as secretary to the meeting); and Mr. J. V. Coyle were also present.

The Board had the following, amongst other matters, under consideration:—The Progress of County Agricultural Schemes; the work of the Department's Agricultural Schools and Stations; Winter Classes; Tobacco growing; Forestry; Improvement of Creameries; Experiments in Winter Dairying, and proposals relating to Inland Fisheries.

A meeting of the Board of Technical Instruction was held on Wednesday, the 20th January, 1908, at the offices of the Department, Upper Merrion-street, Dublin. The following were present:—The Right Hon. T. W. Russell, M.P., Vice-President of the Department, in the chair; Mr. Richard W. Booth, J.P.; Most Rev. John Clancy, D.D., Lord Bishop of Elphin; Mr. Christopher J. Dunn, J.P.; Rev. T. A. Finlay, M.A.,

F.R.U.I.; Alderman Michael Joyce, M.P.; Very Rev. P. J. Lally, P.P.; Mr. Abraham Lyon, J.P.; Mr. William Macartney, J.P.; Mr. W. R. J. Molloy, J.P., M.R.I.A.; Mr. Thomas Power; Most Rev. Richard A. Sheehan, D.D., Lord Bishop of Waterford and Lismore; Mr. W. J. M. Starkie, M.A., LITT.D.; and Mr. Alexander Taylor.

Mr. T. P. Gill, Secretary of the Department; Mr. George Fletcher, F.G.S., Assistant Secretary in respect of Technical Instruction; Mr. W. Vickers Dixon, Senior Inspector for Technical Instruction; Mr. J. D. Daly, M.A. (who acted as secretary to the meeting); and Mr. A. Kelly, were also present.

Technical Instruction Schemes in respect of the Session 1908-9, for the following Urban and County areas were considered:—*Urban*: Drogheda, Enniscorthy, New Ross, Rathmines and Rathgar, Sligo. *Counties*: Carlow, Cavan, Londonderry, Louth, Monaghan, Westmeath.

The schemes having been discussed and approved, the Board concurred in the application of grants in aid thereof from the funds of the Department.

The following, among other matters, were also considered:—

Provision for the training of Manual Instructors; co-operation of employers in securing the attendance of apprentices at Technical Schools; arrangements in connection with the Irish Training School of Domestic Economy; Industrial Scholarships; the utilisation of the Evening Continuation School Code of the Board of National Education in preparing pupils for Technical Schools, with statement thereon from the Consultative Committee of Education; possibility of utilising Domestic Economy teaching under Technical Instruction Schemes for pupils in the higher standards of National Schools; Resolution from the Technical Instruction Committee of the County Borough of Limerick as to negotiations with the Treasury for a loan for Technical School buildings.

A meeting of the Consultative Committee for Co-ordinating Educational Administration was held at the
The Consultative Committee of Education. offices of the Department on Monday, the 18th January, 1909.

Present:—The Right. Hon. T. W. Russell, M.P., Vice-President of the Department, Chairman; Rev. T. A. Finlay, M.A., F.R.U.I.;

Dr. W. J. M. Starkie; Mr. W. R. J. Molloy, M.R.I.A.; Mr. T. P. Gill.

Mr. J. R. Campbell, B.Sc., Assistant Secretary in respect of Agriculture, and Mr. George Fletcher, F.G.S., Assistant Secretary in respect of Technical Instruction, were also present.

Mr. J. D. Daly acted as Secretary to the meeting.

The sixth of this season's competitions was held on the 25th November, 1908. The judges were two in

Surprise Butter number, being representative butter mer-
Competitions, 1908-9. chants of Belfast and Birmingham.

Prizes were awarded to the undermentioned competitors:—Hollyford C. A. D. S.; Irvinestown C. A. D. S.; Moneymore C. A. D. S.; Springfield C. A. D. S.; Drumholm C. A. D. S.; Effin C. A. D. S.

A special additional prize of 10s. has been awarded in each case to the dairymaid or actual maker of an exhibit obtaining a first class prize.

The following minute was adopted by the Agricultural Board at their meeting on the 25th November,

The Preservation 1908:—When negotiations have been
of Woodlands. entered into by an owner for the sale of an estate under the Irish Land Acts, and where the public authority concerned in the sale is of opinion that the woodlands thereon should be preserved and bought by the State, it should be open to that authority to obtain an injunction to prevent the owner from cutting down timber on such woodlands, the Court to have discretion when considering the application for an injunction to have regard to the fact whether or not the price offered for the woodlands by the State is fair and reasonable.

STATISTICAL TABLES

FISHERY STATISTICS--

STATEMENT of the Total QUANTITY and VALUE of the FISH returned
compared with the

	North Coast.				East Coast.			
	1908.		1907.		1908.		1907.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
Brill,	2	3	.	.	13	23	17	27
Soles,	5	24	12	60	79	285	93	367
Turbot,	1	2	.	.	24	98	22	74
Total Prime Fish,	8	29	12	60	116	406	132	468
Cod,	68	15	35	18	959	760	645	751
Conger Eel,	16	8	11	4	543	296	579	322
Haddock,	66	33	252	90	607	571	524	718
Hake, . . . . .	.	.	.	.	473	468	431	712
Herrings,	4,249	1,153	2,706	1,424	2,914	1,103	4,861	1,634
Ling, . . . . .	.	.	.	.	485	205	518	322
Mackerel,	1	1	26	2	367	88	286	78
Plaice,	52	39	103	93	1,510	1,837	1,678	2,096
Ray or Skate,	100	28	108	54	587	160	576	211
Sprats, . . . . .	.	.	.	.	.	.	.	.
Whiting,	1	1	8	4	590	484	534	571
All other except Shell Fish,	100	49	385	110	809	417	689	327
Total,	4,670	1,356	3,646	1,859	9,950	6,795	11,153	8,210
SHELL FISH:—	No.		No.		No.		No.	
Crabs,	2,076	7	7,800	16	151	2	4,290	13
Lobsters,	3,780	104	10,584	268	553	15	1,413	56
Mussels,	Cwts.		Cwts.		Cwts.		Cwts.	
	.		.		377	22	112	11
Oysters,	No.		No.		No.		No.	
	
Other Shell Fish,	Cwts.		Cwts.		Cwts.		Cwts.	
	.		.		49	34	55	33
Total, . . . . .	.	111	.	284	.	73	.	113
Total Value of Fish landed, . . . . .	.	1,467	.	2,143	.	6,368	.	8,323

NOTE.—The above figures are subject to

IRELAND.

as landed on the IRISH COASTS during the month of **October**, 1908, as corresponding period in 1907.

South Coast.				West Coast.				Total.			
1908.		1907.		1908.		1907.		1908.		1907.	
Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.
Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
8	17	9	19	13	32	5	8	36	75	31	54
43	180	39	208	115	326	92	297	242	815	236	932
7	29	8	29	43	170	37	131	75	299	67	234
58	226	56	256	171	528	134	436	353	1,189	334	1,220
23	19	10	18	90	38	3	4	1,140	832	693	791
6	2	4	1	12	4	1	1	577	310	595	328
11	8	97	50	272	152	705	343	956	764	1,578	1,201
28	26	43	31	51	31	167	72	552	525	641	815
1,198	394	2,225	861	3,932	1,896	24,327	4,852	12,293	4,546	34,119	8,771
12	10	5	5	14	5	9	9	511	220	534	336
7,973	1,744	2,649	969	10,719	3,200	1,193	521	19,050	5,063	4,154	1,570
224	279	181	225	208	196	220	220	1,991	2,351	2,182	2,634
38	12	6	1	54	11	341	62	788	214	1,031	328
44	8	102	42	.	.	.	.	44	8	102	42
227	91	105	25	502	186	376	150	1,320	762	1,023	750
337	114	440	190	775	336	277	154	2,021	916	1,791	781
10,179	2,933	5,925	2,674	16,800	6,586	27,753	6,824	41,599	17,670	48,777	19,567
No.	.	No.	.	No.	.	No.	.	No.	.	No.	.
3,696	80	522	20	3,772	164	8,115	258	2,527	9	12,170	30
Cwts. 84	15	Cwts.	.	Cwts. 444	26	Cwts. 180	12	11,801	363	20,634	602
No. 7,688	23	No.	.	No. 3,780	4	No.	.	Cwts. 905	63	Cwts. 292	23
Cwts. 332	52	Cwts. 218	24	Cwts. 445	97	Cwts. 714	122	No. 11,466	27	No.	.
.	170	.	44	.	291	.	393	Cwts. 826	183	Cwts. 987	179
.	3,103	.	2,718	.	6,877	.	7,217	.	645	.	834
.	.	.	.	.	.	.	.	.	18,315	.	20,401

correction in Annual Returns.

FISHERY STATISTICS—

STATEMENT of the Total QUANTITY and VALUE of the FISH returned compared with the

	North Coast.				East Coast.			
	1908.		1907.		1908.		1907.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
Brill,	1	1	.	.	18	29	13	21
Soles,	2	10	1	2	74	285	82	251
Turbot, . . . . .	.	.	.	.	26	110	39	112
Total Prime Fish,	3	11	1	2	118	424	134	384
Cod,	77	48	96	71	936	805	1,163	821
Conger Eel,	18	5	5	2	457	246	538	326
Haddock,	188	89	275	120	529	499	513	502
Hake, . . . . .	.	.	.	.	361	362	302	321
Herrings,	1,050	300	15,518	6,169	3,097	1,262	17,780	3,686
Ling, . . . . .	.	.	.	.	401	189	427	242
Mackerel, . . . . .	.	.	60	30	103	24	.	.
Plaice,	50	38	15	13	1,723	1,917	1,542	1,647
Ray or Skate,	17	4	37	9	504	153	421	124
Sprats, . . . . .	.	.	.	.	.	.	.	.
Whiting,	1	1	4	2	463	391	397	361
All other except Shell Fish,	103	52	391	117	734	422	656	359
Total,	1,516	548	16,402	6,535	9,426	6,694	23,872	8,776
SHELL FISH :—	No.		No.		No.		No.	
Crabs, . . . . .	.	.	.	.	159	1	311	1
Lobsters,	60	3	96	4	766	30	570	24
Mussels,	Cwts.	.	Cwts.	.	Cwts. 219	10	Cwts. 142	10
Oysters,	No.	.	No.	.	No.	.	No. 2,520	8
Other Shell Fish,	Cwts.	.	Cwts.	.	Cwts. 33	22	Cwts. 34	29
Total, . . . . .	.	3	.	4	.	63	.	73
Total value of Fish landed, . . . . .	.	551	.	6,739	.	6,757	.	8,948

* These lobsters were landed at Garnish and Dursey, June, July, and August.

NOTE.—The above figures are subject to

IRELAND.

as landed on the IRISH COASTS during the month of November, 1908, as corresponding period in 1907.

South Coast.				West Coast.				Total.			
1908.		1907.		1908.		1907.		1908.		1907.	
Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
9	19	11	23	.	.	.	.	28	49	24	44
36	164	34	147	84	290	59	173	196	749	176	573
11	47	9	33	21	87	21	100	58	244	69	245
56	230	54	203	105	377	80	273	282	1,042	269	862
41	29	35	33	318	110	20	11	1,372	992	1,314	936
25	12	23	12	34	15	3	3	534	278	569	343
9	11	217	106	890	443	513	302	1,616	1,042	1,518	1,029
2	2	27	21	46	16	99	11	409	380	428	383
1,922	647	1,205	335	1,386	615	32,849	7,269	7,455	2,824	67,352	17,459
36	34	18	17	30	18	.	.	476	241	445	259
94	33	2,174	997	168	67	16,542	6,709	365	124	18,776	7,736
218	267	194	223	102	83	89	77	2,102	2,305	1,819	1,960
10	4	.	.	170	28	31	10	701	189	489	143
44	10	973	214	.	.	.	.	44	10	973	214
161	56	72	33	532	231	300	137	1,157	679	773	536
646	98	238	126	318	149	166	93	1,891	721	1,150	695
3,264	1,438	5,230	2,819	4,108	2,152	50,692	14,925	18,314	10,827	96,196	32,555
No.		No.		No.		No.		No.		No.	
.	.	.	.	.	.	.	.	159	1	311	1
9,828*	287	17	1	1,712	63	1,844	60	12,366	383	2,527	89
Cwts.		Cwts.		Cwts.		Cwts.		Cwts.		Cwts.	
.	.	.	.	8,533†	429	117	7	8,752	439	259	17
No.		No.		No.		No.		No.		No.	
7,884	28	4,221	17	8,820	10	12,852	31	16,704	38	19,593	56
Cwts.		Cwts.		Cwts.		Cwts.		Cwts.		Cwts.	
608	160	445	91	814	163	388	104	1,355	335	867	224
.	465	.	109	.	665	.	202	.	1,196	.	387
.	1,896	.	2,428	.	2,817	.	15,127	.	12,023	.	32,942

† Includes 8,487 cwts. mussel, value £422, landed at Castlemaine during October. correction in Annual Returns.

FISHERY STATISTICS—

STATEMENT of the TOTAL QUANTITY and VALUE of the FISH returned as compared with the

	North Coast.				East Coast.			
	1908.		1907.		1908.		1907.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
Brill, . . . . .	.	.	.	.	46	61	63	87
Solms, . . . . .	.	.	.	.	103	434	83	287
Turbot, . . . . .	.	.	.	.	38	143	30	90
Total Prime Fish, . . . . .	.	.	.	.	186	638	176	464
Cod,	600	178	79	43	1,081	988	1,016	863
Conger Eel,	2	1	.	.	500	255	496	307
Haddock,	351	173	293	147	479	443	506	511
Hake, . . . . .	.	.	.	.	403	403	295	390
Herrings,	3,203	1,317	1,155	480	16,362	2,672	11,891	2,719
Ling, . . . . .	.	.	.	.	125	167	287	204
Mackerel,	108	11	.	.	.	.	.	.
Plaice, . . . . .	.	.	.	.	574	632	640	799
Ray or Skate,	52	26	2	1	514	152	416	126
Sprats, . . . . .	.	.	.	.	.	.	.	.
Whiting,	11	7	.	.	434	369	425	419
Altogether except Shell Fish,	79	32	47	32	585	333	413	278
Total,	4,406	1,745	1,576	703	21,543	7,042	16,561	7,080
SHELL FISH:—	No.		No.		No.		No.	
Crabs, . . . . .	.	.	.	.	122	1	.	.
Lobsters,	144	7	.	.	651	25	637	23
Mussels,	Cwts.		Cwts.		Cwts.		Cwts.	
Oysters,	No.		No.		No.		No.	
Other Shell Fish,	Cwts.		Cwts.		Cwts.		Cwts.	
Total, . . . . .	.	7	.	.	.	62	.	79
Total Value of Fish landed, . . . . .	.	1,752	.	703	.	7,104	.	7,159

NOTE.—The above figures are subject to

IRELAND.

landed on the IRISH COASTS during the Month of December, 1908, as corresponding period in 1907.

South Coast.				West Coast.				Total.			
1908.		1907.		1908.		1907.		1908.		1907.	
Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
5	9	2	4	.	.	1	7	50	70	69	98
21	88	14	60	63	219	39	151	187	741	136	478
3	13	3	13	28	103	15	79	49	259	48	182
29	110	19	77	91	322	58	217	306	1,070	253	758
42	33	25	24	234	112	45	30	1,457	1,341	1,165	960
4	3	30	12	46	33	11	3	552	292	537	322
2	1	61	14	892	549	557	405	1,724	1,166	1,417	1,077
7	6	1	1	23	8	48	19	433	417	344	410
2,435	835	6,007	1,605	1,272	556	2,725	772	23,272	5,380	21,898	5,576
17	17	15	15	20	16	39	22	471	200	341	241
.	.	2,119	804	118	51	3,961	1,735	226	62	6,080	2,539
120	137	29	37	171	141	115	113	865	910	784	949
4	2	.	.	144	47	32	9	714	227	450	136
155	38	70	25	.	.	.	.	155	38	70	25
108	36	.	.	446	191	221	135	900	596	649	551
197	84	138	90	131	64	97	89	992	513	695	489
3,120	1,302	8,604	2,704	3,597	2,125	7,912	3,549	32,666	12,212	34,653	14,036
No.	.	No.	.	No.	.	No.	.	No.	.	No.	.
.	.	.	.	.	.	.	.	122	1	.	.
210	11	408	17	768	24	816	32	1,773	67	1,891	72
Cwts. 14	2	Cwts. .	.	Cwts. 10,845	725	Cwts. 111	11	Cwts. 11,114	741	Cwts. 1,056	36
No. 6,930	18	No. 3,276	7	No. 5,292	6	No. 3,006	6	No. 12,222	24	No. 7,970	16
Cwts. 620	252	Cwts. 359	67	Cwts. 843	171	Cwts. 445	98	Cwts. 1,491	145	Cwts. 839	193
.	283	.	91	.	926	.	147	.	1,278	.	317
.	1,585	.	2,795	.	3,049	.	3,606	.	13,490	.	14,358

correction in Annual Returns.

STATEMENT of the TOTAL QUANTITY of FISH landed on the ENGLISH and WELSH COASTS during the Month and Twelve Months ended 31st December, 1908, compared with the corresponding Periods of the Year 1907.

	December.		Twelve Months ended 31st December.	
	1908.	1907.	1908.	1907.
	QUANTITY.			
	Cwts.	Cwts.	Cwts.	Cwts.
Brill,	2,299	2,457	23,959	23,214
Soles,	5,274	5,012	65,790	63,085
Turbot,	7,025	6,333	67,076	67,348
Prime Fish not separately distinguished.	663	483	2,451	3,622
Total Prime Fish, ...	15,261	14,285	159,276	157,269
Bream,	10,072	9,130	87,369	70,659
Catfish,	699	864	63,934	74,150
Coalfish,	11,932	14,491	240,133	200,435
Cod,	131,493	113,670	1,926,886	1,947,348
Conger Eels,	4,004	3,144	45,789	52,205
Dabs,	11,514	10,119	107,436	112,715
Dogfish,	3,945	3,139	20,063	22,518
Dory,	112	180	2,413	2,477
Flounders or Flukes, ...	446	113	6,618	4,518
Gurnards,	8,524	9,661	103,889	106,403
Haddock,	207,818	220,058	2,528,668	2,862,776
Hake,	27,825	27,946	798,513	781,061
Halibut,	5,322	8,006	198,577	209,506
Latchetts (Tubs),	156	158	2,365	3,020
Lemon Soles,	2,172	2,108	47,401	44,979
Ling,	15,842	13,734	234,301	177,296
Megrims,	8,676	7,889	91,472	90,002
Monks (or Anglers), ...	3,510	2,633	33,995	30,858
Mullet (Red),	27	80	641	648
Plaice,	74,769	82,612	925,189	966,316
Pollock,	1,267	816	22,974	17,517
Skates and Rays,	33,614	29,298	380,200	378,773
Torsk,	3,539	1,362	22,989	16,051
Whiting,	25,225	25,875	209,903	257,562
Witches,	4,726	3,538	36,262	28,755
Herrings,	209,818	297,624	3,982,699	4,439,554
Mackerel,	2,295	1,088	342,911	419,232
Mullet (Grey),	9	14	603	1,132
Pilehards,	1	—	100,953	90,731
Sprats,	33,407	18,810	72,873	39,220
Whitebait,	760	560	7,290	6,711
Fish not separately distinguished, ...	24,568	26,979	375,821	381,914
Total,	883,387	950,004	13,270,406	13,994,311
Shell Fish:—	No.	No.	No.	No.
Crabs,	70,021	81,709	4,092,246	4,802,669
Lobsters,	6,116	4,736	527,165	496,326
Oysters,	3,150,200	4,147,970	28,315,204	32,379,087
Other Shell Fish,	Cwts.	Cwts.	Cwts.	Cwts.
	47,523	48,394	509,998	552,000

NOTE.—The figures for 1908 are subject to correction in the Annual Returns.

STATEMENT of the TOTAL VALUE of FISH landed on the ENGLISH and WELSH COASTS during the Month and Twelve Months ended 31st December, 1908, compared with the corresponding Periods of the Year 1907.

	December.		Twelve Months ended 31st December.	
	1908.	1907.	1908.	1907.
	VALUE.			
	£	£	£	£
Brill,	6,188	6,645	73,383	71,982
Soles,	32,450	34,753	434,871	437,524
Turbot,	28,415	22,601	262,611	260,014
Prime Fish not separately distinguished.	897	711	3,253	5,357
Total Prime Fish, ...	67,948	64,710	774,118	774,877
Bream,	2,058	1,343	18,697	18,753
Catfish,	500	474	27,240	25,144
Coalfish,	3,934	4,772	57,641	59,789
Cod,	79,964	84,896	1,147,957	1,224,644
Conger Eels,	3,100	2,797	33,197	39,703
Dabs,	7,350	7,612	72,090	86,838
Dogfish,	825	784	5,095	6,469
Dory,	111	202	2,254	2,387
Flounders or Flukes,	261	78	3,871	3,042
Gurnards,	2,354	2,687	27,900	29,904
Haddock,	116,239	139,786	1,418,562	1,485,121
Hake,	30,252	30,817	532,603	530,802
Halibut,	16,484	22,426	305,172	352,635
Latchets (Tubs),	112	126	1,521	2,038
Lemon Soles,	6,724	6,755	107,337	112,325
Ling,	7,377	8,159	110,864	102,813
Megrims,	6,526	6,069	64,514	65,041
Monks (or Anglers),	1,431	1,007	13,947	11,660
Mullet (Red),	84	193	1,655	1,792
Plaice,	75,740	89,656	960,332	951,844
Pollock,	692	666	10,766	9,769
Skates and Rays,	19,952	18,519	224,376	216,170
Torsk,	2,530	555	11,471	6,467
Whiting,	10,708	11,225	132,323	122,039
Witches,	5,094	3,757	41,267	32,096
Herrings,	84,172	102,891	1,111,311	1,125,918
Mackerel,	1,769	919	180,691	186,901
Mullet (Grey),	17	33	1,266	1,924
Pilchards,	1	—	34,684	23,141
Sprats,	5,743	4,875	13,522	9,535
Whitebait,	961	837	9,635	9,408
Fish not separately distinguished, ...	10,228	11,051	191,475	195,282
Total,	571,241	630,557	7,739,334	7,826,264
Shell Fish :—				
Crabs,	920	1,018	56,102	56,923
Lobsters,	310	241	24,383	23,801
Oysters,	11,111	14,368	89,149	105,147
Other Shell Fish,	10,140	10,446	124,016	143,301
Total,	22,481	26,073	269,650	329,172
Total value of all Fish, ...	593,722	656,630	8,032,984	8,155,436

NOTE.—The figures for 1908 are subject to correction in the Annual Returns.

STATEMENT of the TOTAL QUANTITY and VALUE of the FISH returned as landed on the SCOTTISH COASTS during the Month and Twelve Months ended 31st December, 1908, compared with the corresponding periods for the Year 1907.

	December.		Twelve Months ended 31st December.	
	1908.	1907.	1908.	1907.
QUANTITY.				
	Cwts.	Cwts.	Cwts.	Cwts.
Herrings,	60,955	43,180	5,686,552	6,312,328
Sprats,	1,705	9,983	11,685	33,284
Sparlings,	20	35	183	259
Mackerel,	79	89	26,167	33,778
Cod,	50,659	44,418	805,527	696,107
Lang,	8,807	6,269	210,755	142,336
Torsk (Tusk),	657	522	17,286	10,159
Smith (Coal Fish),	6,003	8,291	143,524	138,074
Haddock,	101,619	109,479	1,151,519	1,192,458
Whiting,	13,232	14,423	147,708	141,906
Conger Eel,	977	581	26,600	17,860
Turbot,	444	447	5,209	6,448
Halibut,	775	999	52,427	41,108
Lemon Soles,	2,212	1,513	33,227	33,090
Flounders, Plaice, Brill,	4,246	4,112	63,889	70,125
Skate and Rays,	4,780	4,362	124,238	89,597
Fish not separately distinguished, except Shell Fish.	10,741	11,000	121,463	118,325
Total,	268,111	259,703	8,629,968	9,077,203
Shell Fish:—				
	No.	No.	No.	No.
Crabs,	127,224	109,966	2,724,636	2,677,564
Lobsters,	44,484	54,114	685,371	725,421
Oysters,	25,716	189,510	623,221	1,020,250
	Cwts.	Cwts.	Cwts.	Cwts.
Clams,	1,412	1,415	8,533	7,197
Mussels,	16,498	16,767	121,230	127,016
Other Shell Fish,	3,210	2,530	49,232	44,896
VALUE.				
	£	£	£	£
Herrings,	11,155	6,221	1,150,855	1,815,519
Sprats,	237	2,208	2,287	8,602
Sparlings,	58	81	537	880
Mackerel,	35	54	6,644	9,288
Cod,	25,906	25,404	332,970	324,522
Lang,	2,221	2,159	54,690	45,878
Torsk (Tusk),	168	175	4,210	2,963
Smith (Coal Fish),	1,616	2,269	24,185	28,391
Haddock,	50,762	54,726	519,105	538,278
Whiting,	4,674	5,520	54,451	53,304
Conger Eel,	434	294	10,712	8,608
Turbot,	1,717	1,773	21,821	20,965
Halibut,	2,057	2,515	89,460	73,344
Lemon Soles,	5,205	3,963	70,136	68,730
Flounders, Plaice, Brill,	5,218	5,224	80,018	87,609
Skate and Rays,	1,417	1,481	30,241	26,421
Fish not separately distinguished, except Shell Fish.	6,378	6,265	59,101	60,933
Total,	119,568	120,352	2,511,492	3,169,135
Shell Fish:—				
	£	£	£	£
Crabs,	383	514	16,514	13,729
Lobsters,	2,613	2,793	33,920	35,505
Oysters,	761	618	3,411	3,455
Clams,	211	179	1,264	953
Mussels,	695	678	5,543	6,290
Other Shell Fish,	879	663	13,587	12,717
Total,	5,542	5,445	74,239	72,649
Total Value of Fish landed,	125,100	125,797	2,585,731	3,241,784

NOTE.—The above figures are subject to correction in the Annual Returns.

STATEMENT of the TOTAL QUANTITY and VALUE of the FISH returned as landed on the IRISH COASTS during the Month and Twelve Months ended 31st December, 1908, compared with the corresponding Periods of the Year 1907.

	December.		Twelve Months ended 31st December.	
	1908.	1907.	1908.	1907.
QUANTITY.				
	Cwts.	Cwts.	Cwts.	Cwts.
Brill,	50	69	554	537
Soles,	187	136	2,743	2,473
Turbot,	69	48	860	666
Total Prime Fish,	306	253	4,157	3,676
Cod,	1,957	1,165	19,924	12,337
Conger Eel,	552	537	7,350	5,380
Haddock,	1,724	1,417	19,476	15,630
Hake,	433	344	7,122	4,476
Herrings,	23,272	21,868	231,385	228,089
Ling,	471	341	10,971	6,651
Mackerel,	226	6,080	307,038	148,576
Plaice,	865	784	23,868	18,833
Ray or Skate,	711	450	9,834	6,168
Sprats,	155	70	651	2,499
Whiting,	999	649	15,538	12,958
Fish not separately distinguished, except Shell Fish,	992	695	21,202	25,784
Total,	32,666	34,653	678,516	491,035
Shell Fish :—	No.	No.	No.	No.
Crabs,	122	—	222,431	293,878
Lobsters,	1,773	1,891	374,185	323,030
Oysters,	12,222	7,970	125,185	145,200
Mussels,	Cwts.	Cwts.	Cwts.	Cwts.
Other Shell Fish,	11,144	1,056	23,372	11,749
	1,491	839	14,491	12,749
VALUE.				
	£	£	£	£
Brill,	70	98	962	971
Soles,	741	478	11,006	9,784
Turbot,	259	182	3,149	2,580
Total Prime Fish,	1,070	758	15,117	13,285
Cod,	1,341	960	11,879	9,318
Conger Eel,	292	322	3,793	3,242
Haddock,	1,166	1,077	12,624	9,257
Hake,	417	410	5,782	6,566
Herrings,	5,380	5,576	87,403	66,051
Ling,	200	241	4,431	4,415
Mackerel,	62	2,539	73,677	43,178
Plaice,	910	949	25,366	20,497
Ray or Skate,	227	136	2,455	2,384
Sprats,	38	25	125	2,399
Whiting,	506	554	9,262	8,662
Fish not separately distinguished, except Shell Fish,	513	489	9,810	12,077
Total,	12,212	14,036	261,624	200,031
Shell Fish :—				
Crabs,	1	—	652	1,185
Lobsters,	67	72	11,883	10,088
Oysters,	24	16	236	270
Mussels,	741	36	1,384	636
Other Shell Fish,	445	193	3,220	2,728
Total,	1,278	317	17,384	14,907
Total Value of Fish Landed,	13,490	14,353	279,008	214,938

NOTE.—The above figures are subject to correction in Annual Returns.

**AVERAGE PRICES of CROPS, LIVE STOCK, MEAT, PROVISIONS, &c., for
the QUARTER ended 31st DECEMBER, 1908.**

PRODUCT.	PROVINCE.				IRELAND.	
	Leinster.	Munster.	Ulster.	Con-naught.	1908.	1907.
CROPS:—	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Wheat, per 112 lbs.	8 0	6 5½	—	—	7 10½	8 2½
Oats (White), . . .	6 0½	6 0½	5 8½	5 3	5 10	6 8
„ (Black), . . .	5 5½	4 10	—	—	4 11	5 10½
Barley, . . .	7 10½	7 4½	—	—	7 5½	7 1½
Potatoes, . . .	2 3½	2 9½	2 0½	2 1½	2 4	4 1½
Hay (Clover), . . .	3 7½	2 9½	2 10½	2 4	3 3½	3 1½
„ (Meadow), . . .	2 8½	1 9½	2 7½	1 10	2 4½	2 0½
Grass Seed—						
(Perennial Rye), . .	—	—	15 3	—	15 3	14 1½
(Italian Rye), . . .	—	—	16 6	—	16 6	15 6½
Flax, . . . per 14 lbs.	—	—	6 2½	—	6 2½	6 11
LIVE STOCK:—						
Store Cattle:—	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
One year old, per head.	8 6 11	7 15 8	6 8 4	8 1 11	7 12 3	7 10 6
Two years old, . . .	11 11 5	10 11 11	9 3 5	10 8 9	10 10 2	10 3 5
Three years old, . . .	13 18 2	13 12 1	11 8 3	12 2 7	12 14 2	12 3 9
Springers, . . .	15 5 11	13 8 5	13 17 1	14 14 4	14 0 2	13 18 8
Store Sheep:—						
Lambs, . . . per head.	1 5 9	1 6 7	0 18 3	1 3 10	1 5 0	1 11 4
One year old and over, . . .	1 19 11	2 0 1	0 19 8	1 16 9	1 17 6	2 4 0
Two years old and over, . . .	—	—	1 1 10	2 0 1	1 17 5	2 4 4
Store Pigs (8 to 10 weeks old), . . .	1 5 0	1 1 9	1 4 4	1 4 10	1 3 4	0 18 5
Fat Cattle:—						
Bullocks, . . .	—	—	—	—	17 12 10	16 15 6
Heifers, . . .	—	—	—	—	15 5 0	14 9 9
Cows, . . .	—	—	—	—	15 12 11	13 18 6
Fat Sheep:—						
Wethers, . . .	—	—	—	—	1 18 1	2 1 4
Ewes, . . .	—	—	—	—	2 1 2	2 6 5
Hoggets, . . .	—	—	—	—	2 1 8	2 10 1
Lambs, . . .	—	—	—	—	1 9 11	1 10 2
MEAT, PROVISIONS, &c.:—	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Beef (Live), . . per 112 lbs.	—	—	—	—	31 4	29 6
„ (Dead), . . .	—	—	—	—	54 10	51 7½
Mutton (Live), . .	—	—	—	—	31 6	35 7
„ (Dead), . . .	—	—	—	—	55 1	62 3½
Pork (Dead), . . .	48 0	47 7	47 11	45 9½	47 7	47 5½
Butter (Creamery), . .	116 4	115 2	—	—	116 3	115 2
„ (Factory), . . .	101 3	99 11	—	—	100 0	93 8
„ (Farmers), . . .	103 5	99 4	108 9	103 0	100 11	93 11
Eggs, . . . per 120.	11 11½	10 9½	—	10 11½	11 8½	12 2½
Wool, . . . per lb.	0 8	—	—	0 8½	0 8½	0 10½

WEEKLY AVERAGE PRICES of WHEAT, OATS, and BARLEY, per 112 lbs., computed from Market Returns of certain quantities of these Cereals supplied by Inland Revenue Officers, during the QUARTER ended 31st DECEMBER, 1908.

Returns received in the Week ended	WHEAT.		OATS.		BARLEY.	
	Average Price per 112 lbs.	Quantity.	Average Price per 112 lbs.	Quantity.	Average Price per 112 lbs.	Quantity.
1908,	s. d.	Cwts. of 112 lbs.	s. d.	Cwts. of 112 lbs.	s. d.	Cwts. of 112 lbs.
October 3,	8 2½	2,398	5 5½	29,014	7 4½	12,106
" 10,	8 1½	2,580	5 5	23,701	7 4½	6,564
" 17,	8 1	2,370	5 4½	20,634	7 6	9,075
" 24,	7 6	2,450	5 3½	25,596	7 5½	8,245
" 31,	7 7½	1,560	5 2	17,100	7 4½	7,045
November 7,	7 10½	1,620	5 1½	19,921	7 5	7,745
" 14,	7 10	1,641	5 1	30,872	7 4½	2,717
" 21,	7 11½	516	5 2½	18,026	7 6½	3,359
" 28,	7 4½	312	5 2½	14,645	7 4½	2,798
December 5,	6 4	105	5 1½	13,842	7 7	2,218
" 12,	6 8	51	5 2	12,392	7 8	880
" 19,	6 8	46	5 2½	8,298	7 5½	180
" 26,	6 8	42	5 4	5,053	7 11½	576

AVERAGE PRICES of FAT CATTLE and FAT SHEEP, per 112 lbs., LIVE WEIGHT, sold in the DUBLIN MARKETS during the QUARTER ended 31st DECEMBER, 1908, and also for the corresponding period during the eleven preceding years.

DESCRIPTION.	YEAR.																							
	1908.		1907.		1906.		1905.		1904.		1903.		1902.		1901.		1900.		1899.		1898.		1897.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Fat Cattle,	31	4	29	6	29	0½	28	3½	29	1½	29	4½	31	5	29	11½	30	7½	30	7½	27	8½	28	1½
Fat Sheep,	31	6	35	7	37	9½	34	6	34	11½	33	10	32	3	30	2½	32	3½	32	4½	31	5	32	7

NUMBER of ANIMALS included in Returns furnished under the MARKETS and FAIRS (Weighing of Cattle) Act, 1891, Sections 3 and 4, during the Quarter ended 31st DECEMBER, 1908.

WEEK ENDED	FAT CATTLE.				FAT SHEEP.				
	Dublin.		Belfast.		Total Number of Cattle included in Returns.	Dublin.		Belfast.	
	Corporation Market Authorities.	Mr. Gavin Low, Auctioneer.	Corporation Market Authorities.	Mr. John Robson, Auctioneer.		Corporation Market Authorities.	Mr. Gavin Low, Auctioneer.		
1908.									
October 1,	98	146	126	21	391	—	168	—	168
" 8,	102	256	141	23	522	—	151	—	151
" 15,	86	229	133	43	491	—	215	—	215
" 22,	89	149	141	43	422	—	297	—	297
" 29,	105	132	127	27	391	—	315	—	315
November 5,	82	300	157	32	471	—	307	—	307
" 12,	127	185	142	32	486	5	353	—	358
" 19,	73	134	121	47	375	—	445	—	445
" 26,	106	222	127	33	488	10	153	—	163
December 3,	97	167	127	11	402	—	320	—	320
" 10,	114	140	113	27	384	—	286	—	286
" 17,	81	155	115	—	351	—	176	—	176
" 24,	59	42	115	—	216	—	67	—	67
" 31,	82	157	111	—	350	—	172	—	172
Totals,	1,301	2,314	1,796	339	5,750	15	3,425	—	3,440

DISEASES OF ANIMALS IN IRELAND.

NUMBER of OUTBREAKS of SWINE FEVER, and Number of SWINE returned as having been SLAUGHTERED in Ireland, under the Diseases of Animals Act of 1894, in the undermentioned period, by Order of the Department.

Quarter ended	SWINE-FEVER.	
	Outbreaks confirmed.	Swine Slaughtered as Diseased or as having been Exposed to Infection.
31st December, 1908,	13	373

NUMBER of OUTBREAKS reported as having taken place, and NUMBER of ANIMALS returned as having been attacked by ANTHRAX and GLANDERS in Ireland in the undermentioned period.

Quarter ended	ANTHRAX.		GLANDERS (including Farcy).		Epizootic Lymphangitis.	
	Outbreaks Reported.	Animals Attacked.	Outbreaks Reported.	Animals Attacked.	Outbreaks Reported.	Animals Attacked.
31st December, 1908.	1	1	—	—	—	—

NUMBER of Cases of RABIES in DOGS in IRELAND during the undermentioned period.

Quarter ended	Number of Cases.
31st December, 1908,	—

NUMBER of OUTBREAKS reported as having taken place, and NUMBER of ANIMALS returned as having been attacked by SHEEP-SCAB and PARASITIC-MANGE in Ireland in the undermentioned period.

Quarter ended	SHEEP-SCAB.		PARASITIC-MANGE.	
	Outbreaks Reported.	Sheep Attacked.	Outbreaks Reported.	Animals Attacked.
31st December, 1908,	112	1,796	9	13

Veterinary Branch,
Department of Agriculture and Technical Instruction for Ireland,
Dublin.

BUTTER PRICES DURING THE QUARTER

ABSTRACTED FROM "THE GROCER," "GROCER'S REVIEW,"

Excepting 1-lb. Rolls and Farmers' Butter all quotations are the Landed Prices of the less than the landed prices in Great Britain.

			WEEK ENDED				
COUNTRY OF ORIGIN.	Type of Package.	Place of Sale.	OCTOBER				
			3rd.	10th.	17th.	24th.	
			Per cwt.	Per cwt.	Per cwt.	Per cwt.	
IRELAND—	Creamery Butter, Kiels, kegs, or pyramid boxes.	London, ...	114-120	116-120	118-122	120-122	
		Liverpool, ...	116-122	116-121	119-124	122-127	
		Bristol, ...	121-124	121-124	121-124	124-126	
		Cardiff, ...	120-122	120-122	120-122	123-127	
		Manchester, ...	118-122	117-121	119-123	122-127	
		Birmingham, ...	118-122	117/8-121	120-122/6	122-124/6	
		Glasgow, ...	117-118	118-120	119-122	126-127	
		Limerick, ...	—	—	—	—	
		Cork, ...	—	—	—	—	
		Belfast, ...	—	—	—	—	
		Dublin, ...	119-121/4	119-121/4	119-121/4	124-128/4	
		F. O. R., ...	121/4	121/4	121/4	126	
		Factories, ...	—	London, ...	102-112	102-108	102-110	106-112
	—		Liverpool, ...	104-110	104-110	106-112	106-110
	—		Bristol, ...	108	108	—	—
	—		Cardiff, ...	110-112	106-112	110-112	105-110
	—		Manchester, ...	—	—	—	—
	Farmers' Butter, ...	Firkins, 1st, Ex- port Price.	Cork, ...	103	102-105	102-104	103-104
		Do. 2nd "	Cork, ...	98-102	98-99	98-100	99-101
		Do. 3rd "	Cork, ...	96-99	97	96-97	96-98
		Fresh, ...	Cork, ...	99-106	98-106	97-109	99-112
		—	Cork, ...	99-106	98-106	97-109	99-112
FRANCE, ...	12×2 lb. rolls, ...	London, ...	Per doz. lbs. 11/6-14	Per doz. lbs. 11/6-14	Per doz. lbs. 12-14/6	Per doz. lbs. 12-14/6	
	Paris baskets, ...	do., ...	Per cwt. 112	Per cwt. 112	Per cwt. 116	Per cwt. 116	
DENMARK AND SWEDEN.	Kiels, ...	Copenhagen Quotation,	105 Kr. 117/11 per 50 cwt. Kilos.	105 Kr. 117/11 per 50 cwt. Kilos.	109 Kr. 122/3 per 50 cwt. Kilos.	110 Kr. 123/4 per 50 cwt. Kilos.	
		Average overprice,	—	—	—	—	
		London, ...	123-125	123-126	127-131	128-132	
		Liverpool, ...	124-128	124-127	125-133	131-136	
		Bristol, ...	—	—	—	—	
		Cardiff, ...	126-128	126-128	126-128	132-133	
		Manchester, ...	124-127	123-127	125-128	130-134	
		Birmingham, ...	124-128	124-128	125-128/6	130-133	
		Newcastle-on-Tyne, ...	123-126	122-125	124-127	130-132	
		Glasgow, ...	124-126	124-126	124-126	128-130	
		Leith, ...	124/6-125	124/6125	124-125	130/6-131	
		Hull, ...	125-128	124-128	126-128	128-133	
	1 lb. rolls, 10×24 lbs. boxes.	F. O. R. London,	128/4	128/4	133	134/2	
	FINLAND, ...	Kiels, ...	Manchester, ...	120-123	120-122	122-124	127-130
—		Liverpool, ...	120-122	120-122	—	127-130	
—		Hull, ...	120-122	121-123	122-126	126-128	
—		Cardiff, ...	123-124	122	123	—	
—		—	—	—	—	—	

ENDED 31st DECEMBER, 1908.

"GROCER'S GAZETTE," AND OTHER TRADE REPORTS.

Choicest Qualities. The Nett F.O.R. Price to an Irish Creamery would be 5s. to 7s. per cwt. This figure covers freight, commission, handling, &c.

WEEK ENDED

NOVEMBER					DECEMBER				
31st.	7th.	14th.	21st.	28th.	5th.	12th.	19th.	26th.	
Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.
s. s.	s. s.	s. s.	s. s.	s. s.	s. s.	s. s.	s. s.	s. s.	s. s.
123-126	124-126	123-125	118-122	118-120	112-116	110-112	106-110	—	—
124-128	124-128	122-126	122-126	117-120	116-118	116	114-116	114-116	114-116
125-127	124-128	124-126	120-122	118-120	114-116	112-116	114-116	114-116	114-116
124-127	124-126	119-123	119-125	117-120	110-115	111-115	108-114	108-113	108-113
124-126/6	122-127	120-124	120-122/6	118-120	113-115	112-114/6	112-114	—	—
126-128	124-126	122-124	119-121	116-118	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—
124-126	124-126	124-126	120-124	120-124	115-119	114-116/8	115-118	112-115	112-115
126	128/4	128/4	130/8	130/8	128/4	128/4	126	126	126
106-111	106-112	102-110	—	—	—	—	—	—	—
108-110	106-110	105-112	106-112	104-108	102-107	102-106	103-106	—	—
106-112	106-112	106-112	106-110	104-108	100-104	101	101	104	104
108-116	108	108-110	—	—	100-104	—	—	—	—
—	—	—	—	—	—	—	—	—	—
101-107	103-104	103-104	100-101	96-101	96-97	97-101	100-103	100-103	100-103
98-102	99-100	100-102	96-99	91-98	93-96	93-99	98	96-98	96-98
97-100	97-98	95-98	92-95	90-95	93-92	91-94	90-92	90-92	90-92
100-109	99-108	98-106	99-105	95-104	90-100	90-100	94-103	94-102	94-102
Per doz. lbs.	Per doz. lbs.	Per doz. lbs.	Per doz. lbs.	Per doz. lbs.	Per doz. lbs.	Per doz. lbs.	Per doz. lbs.	Per doz. lbs.	Per doz. lbs.
12 14 6	12 14 6	12 14 6	11 6-11	11 6-14	11 14	11-11	11 6-14 6	11 6-14/6	11 6-14/6
Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.
116	116	116	111	111	111	111	113-116	113-116	113-116
111	108	106	106	101	97	98	96	92	92
Kr. 124/5	Kr. 121 1	Kr. 118 9	Kr. 118 9	Kr. 113 1	Kr. 108 7	Kr. 109 9	Kr. 107 6	Kr. 103 1/2	Kr. 103 1/2
per 50 cwt.	per 50 cwt.	per 50 cwt.	per 50 cwt.	per 50 cwt.	per 50 cwt.	per 50 cwt.	per 50 cwt.	per 50 cwt.	per 50 cwt.
Kilos.	Kilos.	Kilos.	Kilos.	Kilos.	Kilos.	Kilos.	Kilos.	Kilos.	Kilos.
129-132	125-128	123-126	122-126	118-120	113-116	114-117	112-115	107-110	107-110
133-136	125-134	124-134	125-130	122-127	118-124	116-120	116-120	113-115	113-115
—	—	—	—	—	—	—	—	—	—
132-135	131-132	129-132	126-130	124-127	118-122	117-118	117-119	115-118	115-118
131-134	127-132	122-126	123-126	121-125	115-119	113-116	115-118	110-114	110-114
130-134	128-134	124-129	121-127/6	120-126	115-121/6	114-117/6	114-118	111-117	111-117
130-132	130-132	126-129	124-126	121-124	115-118	112-113	113-115	110-112	110-112
129-131	130-132	126/6 128/6	123-124	123-124	117-119	114-116	116-118	110-112	110-112
131-132	131-132	123-125	122-123	124-125	116-118	112-113	115-117	112-113	112-113
129-136	129-135	126-130	123-128	123-126	119-123	116-118	116-119	114-116	114-116
135/4	131/10	129/6	129/6	123/8	119	120/2	117/10	113/2	113/2
128-131	126-128	123-124	120-123	119-121	114-116	112-114	114-116	110-112	110-112
128-131	—	123-125	123-124	121-123	114-118	112-114	112-115	—	—
128-130	128-130	124-126	122-125	119-123	116-120	113-116	113-115	110-114	110-114
131	128	126-128	124	120-122	116	—	115-116	112-114	112-114

[Continued on pp. 398-399.]

BUTTER PRICES DURING THE QUARTER

ABSTRACTED FROM "THE GROCER," "GROCER'S REVIEW,"

Excepting 1-lb. Rolls and Farmers' Butter all quotations are the Landed Prices of the less than the landed prices in Great Britain.

COUNTRY OF ORIGIN.	Type of Package.	Place of Sale.	WEEK ENDED			
			OCTOBER			
			3rd.	10th.	17th.	24th.
RUSSIA & SIBERIA.	Kiebs, ...	London, ...	Per cwt. 106 112	Per cwt. 106-110	Per cwt. 108 112	Per cwt. 110-114
		Liverpool, ...	104-114	108-114	106-114	108-115
		Bristol, ...	110 116	110 115	110-116	108-116
		Cardiff, ...	110-116	110 116	110-113	114-120
		Manchester, ...	109 112	108-112	109 112	110-114
		Birmingham, ...	106-112	105-112	105-114	106-114
		Glasgow, ...	112 114	112 114	110 112	114-115
		Leith, ...	104 108	104-108	104 108	108-110
		Hull, ...	109 116	109 116	116 118	110-118
HOLLAND, ...	Boxes, ...	London, ...	116	118	118-120	—
	Rolls, ...	do. ...	Per doz. lbs. 13-13/6	Per doz. lbs. 13-14	Per doz. lbs. 13/6-14	Per doz. lbs. 13/6-14
	Boxes, ...	Glasgow, { Fresh, Sult,	Per cwt. 118-120 117 118	Per cwt. 118-120 117-118	Per cwt. 120-122 119-120	Per cwt. 123-124 122 123
		Manchester, ...	118	117 119	—	124-126
		Hull, ...	120-123	120-123	122-124	123-126
ITALY, ...	Rolls, ...	London, ...	Per doz. lbs. 12 13/6	Per doz. lbs. 12-13/6	Per doz. lbs. 12 13/6	Per doz. lbs. 12/6-14
CANADA ...	56 lb. boxes, ...	London, ...	Per cwt. 116-120	Per cwt. 114 118	Per cwt. 114-116	Per cwt. —
		Liverpool, ...	116-118	116-118	116 121	119-120
		Bristol, ...	118-123	118-123	118 123	118-123
		Cardiff, ...	118-120	116-124	116-120	122-124
		Birmingham, ...	120-122/6	120-122	121-122/6	—
		Manchester, ...	116	115-116	116	—
		Glasgow, ...	—	—	—	—
AUSTRALIA & NEW ZEALAND.*	Boxes, ...	London, ...	A. 114-116 Z. 116 118	A. 114 116 Z. 116 118	A. 118-120 Z. —	A. 118-122 Z. —
		Liverpool, ...	A. — Z. —	A. — Z. —	A. — Z. —	A. — Z. —
		Bristol, ...	A. — Z. —	A. — Z. —	A. — Z. —	A. — Z. —
		Cardiff, ...	A. — Z. 122	A. — Z. 122	A. — Z. 122	A. — Z. 122
		Manchester, ...	A. — Z. —	A. — Z. —	A. — Z. —	A. — Z. —
		Birmingham, ...	A. — Z. —	A. — Z. —	A. — Z. —	A. — Z. —
		Glasgow, ...	A. — Z. —	A. — Z. —	A. — Z. —	A. — Z. —
		Leith, ...	A. — Z. —	A. — Z. —	A. — Z. —	A. — Z. —
		Hull, ...	A. — Z. —	A. — Z. —	A. — Z. —	A. — Z. —
ARGENTINA. ...	Boxes, ...	London, ...	114 118	114-118	116-118	118-122
		Liverpool, ...	—	—	—	122
		Bristol, ...	—	—	—	—
		Cardiff, ...	—	—	—	120
		Manchester, ...	—	—	—	—
		Birmingham, ...	—	—	—	120-123
UNITED STATES, ...	Tubs and boxes, ...	London, ...	106	—	—	—
		Liverpool, ...	—	—	—	—
		Bristol, ...	108	108	108	110
		Cardiff, ...	—	—	—	—
		Manchester, ...	—	—	—	—

* A.—Australia.

Z.—New Zealand.

a.—salted.

u.—unsalted.

ENDED 31st DECEMBER, 1908—continued.

"GROCEER'S GAZETTE," AND OTHER TRADE REPORTS.

Choicest Qualities. The Nett F.O.R. Price to an Irish Creamery would be 5s. to 7s. per cwt.
This figure covers freight, commission, handling, &c.

WEEK ENDED								
NOVEMBER					DECEMBER			
31st.	7th.	14th.	21st.	28th.	5th.	12th.	19th.	26th.
Per cwt. s. s. 108-114 110-116 108-116 110-118 112-116 108-117 114-116 108-110 110-118	Per cwt. s. s. 110-114 110-114 108-116 116-118 112-116 106-116 114-116 108-110 116-118	Per cwt. s. s. 110-114 110-116 108-118 110-118 110-114 105-115 114-116 108-110 110-118	Per cwt. s. s. 108-112 108-115 108-115 110-116 112-114 105-114 112-114 108-110 108-116	Per cwt. s. s. 108-108 104-114 106-114 108-112 112-114 102-112 112-114 108-110 106-110 106-114	Per cwt. s. s. 102-106 104-110 106-112 108-110 106-111 102-108 106-106/6 108-110 106-109 106-111	Per cwt. s. s. 102-106 103-110 108-110 110 106-108 106-106/6 106-108 106-110 104-110	Per cwt. s. s. 100-104 104-108 102-110 106-110 102-108 100-105 106-110 109-106 106-110	Per cwt. s. s. 98-104 105-107 102-110 — 102-104 98-104 106-108 100-106 104-108
Per doz. lbs. 13/6-14 Per cwt. 124-125 123-124 125-126 126-130	Per doz. lbs. 13/6-14 Per cwt. 125-126 124-125 124-126 126-128	Per doz. lbs. 13/6-14 Per cwt. 124-125 123-123 120-121 123-126	Per doz. lbs. 13/6-14 Per cwt. 120-121 117-118 119-121 119-124	Per doz. lbs. 12/6-13 Per cwt. 118-119 114-115 119-120 118-122	Per doz. lbs. 12/6-13 Per cwt. 114-116 110-112 112-114 114-120	Per doz. lbs. 12/6-13 Per cwt. 114-116 110-112 108-110 110-114	Per doz. lbs. 12/6-13 Per cwt. 116-118 112-114 111-113 114-118	Per doz. lbs. 12/6-13 Per cwt. 113-114 110-111 108-110 116-119
Per doz. lbs. 12/6-14 Per cwt. 119-122 118-124 120-126 — —	Per doz. lbs. 13-14 Per cwt. 119-122 120-124 118-126 — —	Per doz. lbs. 13-14 Per cwt. 119-124 118-122 — —	Per doz. lbs. 12/6-14 Per cwt. 117-122 118-120 — —	Per doz. lbs. 12/6-14 Per cwt. 116-120 116-118 — —	Per doz. lbs. 12/6-14 Per cwt. 110-114 116 — —	Per doz. lbs. 12/6-14 Per cwt. 108-112 108-112 108-112 — —	Per doz. lbs. 12/6-14 Per cwt. 108-112 108-112 108-112 — —	Per doz. lbs. 12/6-14 Per cwt. 108-114 110-112 — — —
A. 120-124 Z. — A. — Z. — A. — Z. 122 A. — Z. — A. — Z. — A. — Z. — A. — Z. — A. — Z. — A. — Z. —	A. 118-122 Z. 125 A. — Z. 122 A. — Z. — A. — Z. — A. — Z. — A. — Z. — A. — Z. — A. — Z. — A. — Z. —	A. 116-118 Z. 120-122 A. — Z. — A. — Z. — A. 120-122 Z. — A. — Z. — A. — Z. — A. — Z. — A. — Z. — A. — Z. —	A. 112-116 Z. 114-116 A. — Z. — A. 118-122 Z. — A. 114-120 Z. 120-124 A. — Z. — A. — Z. — A. — Z. — A. — Z. — A. — Z. —	A. 104-110 Z. 110-114 A. 110-118 Z. 115-120 A. 110-114 Z. 116-120 A. 112-116 Z. 114-116 A. — Z. 110-112 A. — Z. — A. — Z. — A. — Z. — A. — Z. —	A. 100-106 Z. 107-110 A. 110-114 Z. 113-116 A. 110-112 Z. 112-116 A. 110-112 Z. 117-118 A. 106-110 Z. 108-114 A. — Z. 112-114 A. { 112-114 Z. — A. — Z. — A. — Z. — A. 110-112 Z. 112-113 A. — Z. — A. — Z. — A. — Z. —	A. 104-108 Z. 109-112 A. 108-112 Z. 111-117 A. 110-114 Z. 112-116 A. 110-112 Z. 117-118 A. 106-110 Z. 108-114 A. — Z. 112-114 A. { 112-114 Z. — A. — Z. — A. — Z. — A. 104-112 Z. 110-114	A. 104-108 Z. 106-110 A. 107-108 Z. 112-114 A. 104-112 Z. 112-116 A. 109-112 Z. 114-116 A. 104-108 Z. 108-110 A. — Z. 112-114 A. { 107-109 Z. — A. — Z. — A. 110-113 Z. —	
120-126 124-126 — 120-122 121-122 122-125 128	122-126 120-125 — 120 122 121-125 124	116-122 119-124 — 122 — 120-123 124	112-115 117-120 — 120-122 120 119-122 120	106-110 112-115 — 116-117 116-118 114-118 118	102-106 110-116 — 114-116 108-112 110-113 110	104-108 109-112 — 112 106-110 108-110 108	102-106 110-112 — 110-114 107-110 109-110 110	100-106 — — 113-114 104-108 107-108 108
— — 110 — — — —	— — — — — — —	— — — — — — —	— — — — — — —	— — — — — — —	— — — — — — —	— — — — — — —	— — — — — — —	— — — — — — —

TABLES SHOWING THE EXPORTS

TABLE

RETURN of the NUMBER of ANIMALS EXPORTED from IRELAND to GREAT BRITAIN
PORTS of EMBARKATION

IRISH PORTS.	CATTLE.							SHEEP.			
	Fat.	Stores (fattening).	Milch Cows.	Springers.	Other Cattle.	Calves.	Total.	Fat.	Stores.	Lambs.	Total.
Ballina, . . .	75				267	342	1,986				1,986
Belfast, . . .	6,185	46,015	2,157	1,748	85	811	57,004	8,709	299	17	9,025
Coleraine, . . .	11	470					481	225		221	446
Cork, . . .	2,817	14,111	898	1,643	979	17,200	37,651	9,883	1,052		10,935
Drogheda, . . .	7,685	10,226	341	10		6	18,268	9,149			9,149
Dublin, . . .	68,237	48,211	8,200	1,370	2,514	6,911	135,443	85,089	517	4	85,610
Dundalk, . . .	1,044	7,773	149	130		2	9,088	11,054			11,054
Dundrum, . . .			1	6			7				
Greenore, . . .	425	9,278	302	107		4	10,576	3,376			3,376
Larne, . . .	91	6,474	12	67		1,448	8,092	51	151		202
Limerick, . . .	1,068	339				24	1,461	20		51	71
Londonderry, . . .	607	20,589	229	846	736		26,290	2,051	654	2,710	5,415
Millford, . . .		29			22		51				
Mulroy, . . .		180	1	9			190				
Newry, . . .	108	2,763	2				2,873	3,471			3,471
Portrush, . . .		35					35				
Rosslare, . . .											
Rigo, . . .	435	723			132		1,590	2,743		1,174	3,917
Warrenpoint, . . .											
Waterford, . . .	6,715	23,680	62	138	549	2,376	33,520	11,595	70		11,665
Westport, . . .	206	71		6	324		667	4,974			4,974
Wexford, . . .	231						234	5,223			5,223
Total, . . .	96,033	190,970	12,414	6,480	5,908	32,068	343,873	159,599	2,743	4,177	166,519

TABLE

RETURN of the NUMBER of ANIMALS EXPORTED from IRELAND to GREAT BRITAIN
PORTS of DEBARKATION

BRITISH PORTS.	CATTLE.							SHEEP.			
	Fat.	Stores (fattening).	Milch Cows.	Springers.	Other Cattle.	Calves.	Total.	Fat.	Stores.	Lambs.	Total.
Ardrossan, . . .	1,606	11,802	1,166	553	24	30	15,181	123	77		200
Ayr, . . .	2,205	14,856	392	492	47	1,038	19,030	334	333		667
Barrow, . . .	33	917	44	113			1,107	69			69
Bristol, . . .	649	8,325	116	155		2,198	11,443	4,885	385		5,270
Cardiff, . . .											
Dover, . . .											
Falmouth, . . .											
Fishguard, . . .	3,981	18,494	679	1,075	179	14,562	38,970	13,253	737		13,990
Fleetwood, . . .	310	3,906	282	103		18	4,619	3,185	440	229	3,854
Glasgow, . . .	14,753	40,703	1,026	970	2,645	6,633	66,630	1,451	470	576	2,497
Greenock, . . .	456	5,962	7	47	1	23	6,496				
Heysham, . . .	3,110	13,972	1,116	554	23	220	18,995	5,710	148		5,858
Holyhead, . . .	12,475	26,084	1,478	683	40	2,785	43,545	27,678			27,678
Liverpool, . . .	43,274	39,597	6,029	1,689	2,946	3,697	97,232	97,871	66	3,368	101,305
London, . . .			1			1	2				
Manchester, . . .	7,760	272	48	7	3		8,090	4,827			4,827
Newhaven, . . .		10					10				
Plymouth, . . .	606	194		1		23	824	30			30
Preston, . . .	589						589		45		45
Silloth, . . .	4,092	1,014				12	5,118		2	4	6
Southampton, . . .	46	90	17	2		144	299	162			152
Stranraer, . . .	88	4,772	12	30		784	5,686	31	40		71
Whitehaven, . . .			1	6			7				
Total, . . .	96,033	190,970	12,414	6,480	5,908	32,068	343,873	159,599	2,743	4,177	166,519

TABLE

RETURN of the NUMBER of ANIMALS IMPORTED into IRELAND from GREAT BRITAIN
of DEBARKATION

IRISH PORTS.	CATTLE.							SHEEP.			
	Fat.	Stores (fattening).	Milch Cows.	Springers.	Other Cattle.	Calves.	Total.	Fat.	Stores.	Lambs.	Total.
Ballina,	103	.	103
Belfast,	19	.	.	.	.	19	336	4,415	202	4,962
Coleraine,	15	214	.	229
Cork,	2	.	1	.	.	3	.	4	.	4
Drogheda,
Dublin,	36	3	.	1	6	46	1,341	2,669	238	4,248
Dundalk,	4	.	4
Dundrum,
Greenore,	4	.	.	4	18	.	1	19
Larne,	47	.	11	.	.	58	234	137	.	371
Limerick,
Londonderry,	3	.	1	.	3	7	.	485	1,150	1,635
Newry,	283	.	.	283
Portrush,	25	.	25
Rosslare,
Sligo,	2	1	.	.	.	3	183	.	.	183
Waterford,	1	1	1	3	.	4
Westport,	1	.	.	.	.	1	47	.	.	47
Wexford,
Total,	110	4	17	1	10	142	2,457	8,069	1,591	12,107

TABLE

RETURN of the NUMBER of ANIMALS IMPORTED into IRELAND from GREAT BRITAIN
EMBARKATION in

BRITISH PORTS.	CATTLE.							SHEEP.			
	Fat.	Stores (fattening).	Milch Cows.	Springers.	Other Cattle.	Calves.	Total.	Fat.	Stores.	Lambs.	Total.
Ardrossan,	14	.	.	.	.	14	461	1,636	202	2,299
Ayr,	198	2,335	.	2,533
Barrow,
Bristol,	1	.	.	.	.	1	.	1	.	1
Dover,
Falmouth,
Fishguard,	1	1	1	3	.	4
Fleetwood,	1	.	1
Glasgow,	20	3	1	.	3	27	619	2,919	770	4,308
Greenock,	779	312	491	1,582
Heysham,	1	.	.	.	.	1	.	.	.	.
Holyhead,	2	.	4	.	4	11	18	11	5	34
Liverpool,	3	.	1	.	2	6	8	21	.	29
London,	1	.	1	.	.	.	.
Manchester,	14	.	.	.	.	14	.	.	.	.
Newhaven,
Plymouth,
Silloth,	4	.	.	.	.	4	188	717	123	1,028
Southampton,	3	1	.	.	.	4	.	.	.	.
Stranraer,	47	.	11	.	.	68	185	103	.	288
Whitehaven,
Total,	110	4	17	1	10	142	2,457	8,069	1,591	12,107

III.

during the Three Months ended 31st DECEMBER, 1908, showing the PORTS in Ireland.

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	IRISH PORTS.
Fat.	Stores.	Total.		Stallions.	Mares.	Geldings.	Total.				
.	1	1	.	5	55	59	119	1	.	103	Ballina.
.	.	.	.	.	3	.	3	.	.	5,092	Belfast.
.	.	.	.	2	55	61	118	.	.	232	Coleraine.
.	1	1	2	52	382	235	669	.	1	125	Cork.
.	1	1	.	.	1	.	1	.	.	4,967	Drogheda.
.	.	.	.	.	.	.	.	.	.	6	Dublin.
.	.	.	.	2	57	42	101	1	.	125	Dundalk.
.	.	.	.	2	15	9	26	.	.	455	Dundrum.
.	.	.	.	.	.	.	.	.	.	.	Greenore.
.	.	.	.	3	3	7	13	.	.	1,655	Larne.
.	.	.	.	.	2	2	4	.	.	287	Limerick.
.	.	.	.	.	2	4	4	.	.	29	Londonberry.
.	.	.	.	.	2	5	7	.	.	7	Newry.
.	.	.	.	.	1	1	1	.	.	187	Portlusk.
.	.	.	.	3	76	98	177	.	.	182	Rossare.
.	1	1	.	.	2	1	3	.	.	48	Sligo.
.	.	.	.	.	.	.	.	.	.	4	Waterford.
.	.	.	.	.	.	.	.	.	.	.	Westport.
.	.	.	.	.	.	.	.	.	.	.	Wexford.
.	4	4	2	69	651	523	1,246	2	1	13,504	Total.

IV.

during the Three Months ended 31st DECEMBER, 1908, showing the PORTS of Great Britain.

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	BRITISH PORTS.
Fat.	Stores.	Total.		Stallions.	Mares.	Geldings.	Total.				
.	5	9	14	.	.	2,327	Ardrossan.
.	.	.	.	1	10	16	27	.	.	2,560	Ayr.
.	1	.	1	.	.	1	Barrow.
.	90	92	182	.	1	185	Bristol.
.	.	.	.	10	10	10	20	.	.	20	Dover.
.	1	1	.	.	1	Falmouth.
.	.	.	.	4	36	53	93	.	.	98	Fishguard.
.	.	.	.	2	17	14	33	.	.	34	Fleetwood.
.	.	.	.	4	24	22	50	1	.	4,386	Glasgow.
.	1	1	.	1	1	10	11	.	.	1,593	Greenock.
.	1	1	2	48	7	19	27	.	.	29	Heysham.
.	2	2	.	4	398	197	643	1	.	692	Holyhead.
.	27	50	81	.	.	118	Liverpool.
.	2	1	3	.	.	4	London.
.	1	2	3	.	.	17	Manchester.
.	Newhaven.
.	.	.	.	3	10	16	29	.	.	29	Plymouth.
.	3	3	.	.	1,035	Silloth.
.	4	Southampton.
.	.	.	.	2	15	8	25	.	.	371	Stranraer.
.	Whitehaven.
.	4	4	2	69	654	523	1,246	2	1	13,504	Total.

**RETURN of the NUMBER of ANIMALS EXPORTED from IRELAND to the
showing the PORTS of**

IRISH PORTS.	CATTLE.					SHEEP.		
	Fat.	Stores.	Other Cattle.	Calves.	Total.	Sheep.	Lambs.	Total.
BELFAST, . . . . .	.	23	.	.	23	.	.	.
DUBLIN,	149	182	.	12	343	.	.	.
TOTAL,	149	205	.	12	366	.	.	.

**RETURN of NUMBER of ANIMALS EXPORTED from IRELAND to the
showing the PORTS of DEBARKATION**

ISLE OF MAN PORT.	CATTLE.					SHEEP.		
	Fat.	Stores.	Other Cattle.	Calves.	Total.	Sheep.	Lambs.	Total.
DOUGLAS,	149	205	.	12	366	.	.	.

**RETURN of the NUMBER of ANIMALS IMPORTED into IRELAND from the
showing the PORTS of**

IRISH PORTS.	CATTLE.					SHEEP.		
	Fat.	Stores.	Other Cattle.	Calves.	Total.	Sheep.	Lambs.	Total.
BELFAST,
DUBLIN,
TOTAL,

**RETURN of the NUMBER of ANIMALS IMPORTED into IRELAND from the
showing the PORTS of EMBARKATION**

ISLE OF MAN PORT.	CATTLE.					SHEEP.		
	Fat.	Stores.	Other Cattle.	Calves.	Total.	Sheep.	Lambs.	Total.
DOUGLAS,

**ISLE OF MAN during the Three Months ended 31st DECEMBER, 1908,
EMBARKATION in IRELAND.**

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	IRISH PORTS.
Fat.	Stores.	Total.		Stal- lions.	Mares.	Geld- ings.	Total.				
.	23	BELFAST.
.	343	DUBLIN.
.	366	TOTAL.

**ISLE OF MAN during the Three Months ended 31st DECEMBER, 1908,
in the ISLE OF MAN.**

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	ISLE OF MAN PORT.
Fat.	Stores.	Total.		Stal- lions.	Mares.	Geld- ings.	Total.				
.	366	DOUGLAS.

**ISLE OF MAN during the Three Months ended 31st DECEMBER, 1908,
DEBARKATION in IRELAND.**

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	IRISH PORTS.
Fat.	Stores.	Total.		Stal- lions.	Mares.	Geld- ings.	Total.				
.	1	1	.	.	1	BELFAST.
.	1	1	.	.	1	DUBLIN.
.	2	2	.	.	2	TOTAL.

**ISLE OF MAN during the Three Months ended 31st DECEMBER, 1908,
in the ISLE OF MAN.**

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	ISLE OF MAN PORT.
Fat.	Stores.	Total.		Stal- lions.	Mares.	Geld- ings.	Total.				
.	2	2	.	.	2	DOUGLAS.

COASTING AND

RETURN of the NUMBER of ANIMALS SHIPPED to and from Places in Ireland
of Embarkation

IRISH PORTS.	CATTLE.					SHEEP.			SWINE.		
	Fat.	Stores.	Other Cattle.	Calves.	Total.	Sheep.	Lambs.	Total.	Fat.	Stores.	Total.
Cork to Aghada Pier,	4	4	.	.	.	.	.	.
" to Belfast, .	.	18	.	10	28	.	.	.	.	.	.
" to Spike Island,	13	13
" to Queenstown,
" to Waterford, .	.	1	.	10	11	.	.	.	.	.	.
Total, .	.	19	.	24	43	.	.	.	.	13	13
Aghada Pier to Cork,	78	.	78	317	.	317
Belfast "
Spike Island "	2	.	2	.	.	.
Queenstown "	36	.	36
Waterford " .	.	1	.	.	1	.	.	.	.	.	.
Total, .	.	1	.	.	1	80	.	80	353	.	353
Waterford to Ballyhack, .	5	6	.	16	27	.	.	.	20	.	20
" to Belfast, .	.	8	.	.	8	.	.	.	.	.	.
" to Duncannon, .	.	69	.	9	78	2	8	10	1	12	13
Total, .	5	83	.	25	113	2	8	10	21	12	33
Ballyhack to Waterford, .	10	.	.	.	10	51	7	58	74	.	74
Belfast to Waterford,
Duncannon to Waterford, .	27	.	.	.	27	40	.	40	275	.	275
Kilrush to Limerick, .	.	184	.	.	184	.	.	.	2,214	.	2,214
Kildysart, "	243	.	243
Glin, "	99	.	99
Portumna, "	400	.	400
Tarbert, " .	.	15	.	.	15	.	.	.	85	.	85
Kilkee, "	200	.	200
Total, .	.	199	.	.	199	.	.	.	3,241	.	3,241
Greencastle to Greenore,
Greenore to Greencastle,
Londonderry to Moville, .	.	10	.	.	10	.	.	.	.	.	.
Moville to Londonderry, .	2	140	.	.	142	.	66	66	.	.	.
Ballina to Sligo,
Belmullet " .	.	2	80	.	32	55	.	55	1,463	.	1,463
Total, .	.	2	80	.	32	55	.	55	1,463	.	1,463
Sligo to Ballina, .	.	3	.	.	3	.	.	.	.	.	.
Leithbeg to Mulroy, .	.	4	.	.	4	.	.	.	.	11	11
Milford to Mulroy, .	.	49	9	1	59	.	.	.	5	1	6
Mulroy to Londonderry,
Londonderry to Mulroy,
Total, .	44	510	39	50	643	228	81	309	5,433	37	5,469

INLAND NAVIGATION.

during the Three Months ended 31st December, 1908, showing the Places and Debarkation.

Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	IRISH PORTS.
	Stallions.	Mares.	Geldings.	Total.				
.	4	Cork to Aghada Pier.
.	28	" to Belfast.
.	13	" to Spike Island.
.	" to Queenstown.
.	.	.	1	1	.	.	12	" to Waterford.
.	.	.	1	1	.	.	57	Total.
.	395	Aghada Pier to Cork.
.	.	.	1	1	.	.	1	Belfast "
.	2	Spike Island "
.	36	Queenstown "
.	.	2	.	2	.	.	3	Waterford "
.	.	2	1	3	.	.	437	Total.
.	.	1	.	1	.	.	48	Waterford to Ballyhack.
.	.	2	.	2	.	.	10	" to Belfast.
.	.	1	2	3	.	.	104	" to Duncannon.
.	.	4	2	6	.	.	162	Total.
.	142	Ballyhack to Waterford.
.	.	6	7	13	.	.	13	Belfast to Waterford.
.	342	Duncannon to Waterford.
.	.	2	.	2	.	.	2,400	Kilrush to Limerick.
.	243	Kildysart "
.	99	Glin "
.	400	Portumna "
.	100	Tarbert "
.	200	Kilkee "
.	.	2	.	2	.	.	3,142	Total.
.	Greencastle to Grepnore.
.	Greennore to Greencastle.
.	10	Londonderry to Moville.
.	208	Moville to Londonderry.
.	.	1	1	2	.	.	2	Ballina to Sligo.
.	1,550	Belmullet "
.	.	1	1	2	.	.	1,552	Total.
.	.	1	.	1	.	.	4	Sligo to Ballina.
.	15	Leithbeg to Mulroy.
.	.	.	1	1	.	.	66	Milford to Mulroy.
.	Mulroy to Londonderry.
.	Londonderry to Mulroy.
.	.	14	15	29	.	.	6,450	Total.

RETURN of the NUMBER of HORSES EXPORTED from IRELAND through GREAT BRITAIN to the COLONIES and FOREIGN COUNTRIES during the THREE MONTHS ended 31st DECEMBER, 1908, showing the Ports of Embarkation in Ireland.

PORTS.	Number of Horses.			
	Stallions.	Mares.	Geldings.	Total.
Belfast,	1	67	17	85
Cork,	—	—	—	—
Dublin,	—	68	44	112
Dundalk,	—	42	33	75
Greenore,	—	400	154	554
Waterford,	3	16	49	68
Total,	4	593	297	894

RETURN of the NUMBER of HORSES IMPORTED into IRELAND through GREAT BRITAIN from the COLONIES and FOREIGN COUNTRIES during the THREE MONTHS ended 31st DECEMBER, 1908, showing the Ports of Debarkation in Ireland.

PORTS.	Number of Horses.			
	Stallions.	Mares.	Geldings.	Total.
Belfast,	—	—	—	—
Dublin,	—	4	3	7
Waterford,	—	—	—	—
Total,	—	4	3	7

RETURN of the NUMBER of HORSES IMPORTED into IRELAND direct from FOREIGN COUNTRIES during the THREE MONTHS ended 31st DECEMBER, 1908, showing the Ports of Debarkation in Ireland.

PORTS.	Number of Horses.			
	Stallions.	Mares.	Geldings.	Total.
Dublin,	—	—	—	—
Portrush,	—	—	—	—
Total,	—	—	—	—

EMIGRATION FROM IRELAND.

TABLE showing, by Destinations, the Numbers of Emigrants (Natives of Ireland) who left the Ports of Ireland during the months of October, November, December, 1908, and the total for the Twelve Months ended the 31st December, 1908; together with the total Number of Emigrants in each of the corresponding periods of the year 1907.

DESTINATION.	October, 1908.	November, 1908.	December, 1908.	Twelve Months ended 31st December, 1908.
FOREIGN COUNTRIES :—				
America (U.S.),	1,871	649	286	16,861
Canada,	160	91	43	2,531
South Africa	13	11	7	148
Australia,	81	111	47	607
New Zealand,	3	25	15	126
Other Countries,	9	12	5	116
Total,	2,137	899	403	20,389
GREAT BRITAIN :—				
England and Wales,	174	122	116	1,874
Scotland,	85	56	74	1,032
Total,	259	178	190	2,906
General Total for 1908,	2,396	1,077	593	23,295
General Total for 1907,	4,283	1,808	665	39,052

The figures are subject to revision in the Annual Report.

The figures in the above Table have been extracted from the Returns published by the Registrar-General for Ireland.

ACCOUNT showing the QUANTITIES of certain kinds of AGRICULTURAL
into Ireland in each WEEK from

ARTICLES.	WEEK ENDED				
	3rd Oct.	10th Oct.	17th Oct.	24th Oct.	31st Oct.
ANIMALS LIVING—					
Horses, No.	.	.	.	.	.
FRESH MEAT—					
Beef (including refrigerated and frozen), cwt.	3,210	.	.	.	.
Mutton, " " "	1,400	.	.	.	.
Unenumerated, . . . . . " " "	.	.	.	.	.
SALTED OR PRESERVED MEAT—					
Bacon, cwt.	.	.	.	.	.
Beef, . . . . . " "	.	.	.	.	.
Hams, . . . . . " "	.	.	.	.	.
Pork, " "	120	.	.	.	.
Meat, unenumerated, Salted or Fresh, cwt.	66	.	.	.	.
Meat, preserved otherwise than by salting (including tinned and canned), cwt.	.	6	.	.	54
DAIRY PRODUCE AND SUBSTITUTES—					
Butter, cwt.	.	.	.	.	.
Margarine, " "	130	75	71	46	60
Cheese, " "	.	.	3	.	289
Milk, Condensed, " "	85	67	103	92	73
" Cream, . . . . . " "	.	.	.	.	.
" Preserved, other kinds, . . . . . " "	.	.	.	.	.
EGGS, qt. hunds.	720	.	1,116	600	624
LARD, cwt.	.	.	1,037	.	29
CORN, GRAIN, MEAL, AND FLOUR—					
Wheat, cwt.	84,200	.	35,800	32,300	28,000
Wheat Meal and Flour, " "	2,500	26,900	51,400	17,100	30,300
Barley, " "	147,400	118,500	.	.	65,000
Oats, . . . . . " "	.	.	.	.	.
Peas, " "	230	150	220	40	20
Beans, . . . . . " "	.	.	.	.	.
Maize or Indian Corn, " "	374,700	341,200	76,200	146,700	81,900
FRUIT, RAW—					
Apples, " "	20	.	.	.	.
Currants, . . . . . " "	.	.	.	.	.
Gooseberries, . . . . . " "	.	.	.	.	.
Pears, . . . . . " "	.	.	.	.	.
Plums, . . . . . " "	.	.	.	.	.
Grapes, . . . . . " "	.	.	.	.	.
Lemons, . . . . . " "	.	.	.	.	.
Oranges, . . . . . " "	.	.	.	.	.
Strawberries, . . . . . " "	.	.	.	.	.
Unenumerated, . . . . . " "	.	.	.	.	.
HAY, tons	.	.	.	.	.
STRAW, . . . . . " "	.	.	.	.	.
MOSS LITTER, " "	10	108	35	20	43
HOPS, cwt.	.	.	.	.	.
VEGETABLES, RAW—					
Onions, bushels	2,840	800	3,752	1,770	1,010
Potatoes, cwt.	.	.	.	.	.
Tomatoes, . . . . . " "	.	.	.	.	.
Unenumerated, £	8	.	.	.	.
VEGETABLES DRIED, cwt.	.	.	.	.	.
Preserved by Canning, . . . . . " "	.	.	.	.	.
POULTRY AND GAME, . . . . . £	.	.	.	.	.

* This Table is confined to the Imports of certain kinds of Agricultural Produce into to a request from this Department kindly consented to separate the Irish Imports (direct) form of Weekly Returns.

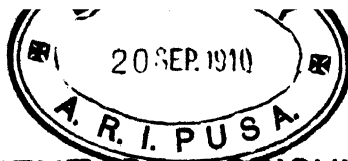
PRODUCE Imported direct (i.e. from the Colonies or Foreign Countries)
3rd October, 1908, to 26th December, 1908.*

WEEK ENDED							
7th Nov.	14th Nov.	21st Nov.	28th Nov.	5th Dec.	12th Dec.	19th Dec.	26th Dec.
.
.	.	.	.	.	.	.	3,696
.	.	.	.	.	.	.	1,750
.	.	.	.	.	.	.	55
.
.	.	1	.	.	.	.	.
.	.	.	.	240	.	.	.
.
.	88	20	.	.	25	32	555
.	.	12	.	.	.	.	.
100	120	51	83	90	54	29	61
.	683	.	5	243	.	.	.
53	136	64	42	60	67	51	.
.
.
1,812	1,512	1,092	2,160	216	576	3,168	540
3	185	10	6	200	136	134	676
14,000	29,600	.	.	238,800	313,300	27,300	20,200
82,100	4,100	6,600	1,700	34,900	65,800	34,800	75,800
61,400	.	33,000	.	.	10,700	.	.
.	.	.	.	.	.	200	.
50	110	20	.	20	.	40	20
88,100	128,700	181,800	87,100	215,700	129,100	189,200	260,100
.	21	.	.	.	68	.	.
.
.
.
.
.
.
.
.
32	30	87	30	97	60	51	18
.	.	.	.	.	56	.	.
535	1,402	1,820	7,594	520	1,964	840	1,582
.
2	2	.	.	.	8	4	.
.	.	.	.	50	.	.	.
.
.

Ireland from the Colonies and Foreign Countries. The Board of Customs have in answer from those of the United Kingdom, and to supply this Department with them in the

Statistics and Intelligence Branch,
 Department of Agriculture
 and Technical Instruction for Ireland.

Vol. IX.



No. 3.

DEPARTMENT OF AGRICULTURE

AND

TECHNICAL INSTRUCTION FOR IRELAND.

JOURNAL.

The Dead Meat Trade—Danish Heath Society—Keeping of Egg Records—The Winter Class—Pig Feeding Experiments—The Warble Flies—Protection of Woodlands in Ireland—Keeping of Attendance Records—Marketing of Irish Produce—Tobacco Growing in Ireland—Grass-Seed Growing Industry—Flax Seed, 1909—Official Documents—Notes and Memoranda—Statistical Tables.

NINTH YEAR.

No. 3.

APRIL, 1909.



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NOTICE.

Communications respecting the literary contents of this JOURNAL should be addressed to the Superintendent of the Statistics and Intelligence Branch, Department of Agriculture and Technical Instruction for Ireland, Upper Merrion-street, Dublin.

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THE DEAD MEAT TRADE.

[In view of the increasing attention which has been drawn to the possibility of developing in Ireland a dead meat industry similar to that at present carried on between the North of Scotland and the Central Market at Smithfield in London, the Department deemed it advisable to send over an officer to investigate and report upon the conditions under which the business is worked. The results of the inquiries made are embodied in the following article.]

The London Central Market for dead meat at Smithfield, which was opened in 1868, is recognised as the largest meat distributing centre in the world. The supply of beef which is daily forwarded to it is both of home and imported origin. The home supply, which in recent years, owing to the development of the chilled meat trade, scarcely amounts to 20 per cent. of the total, is sent from the chief feeding districts in England and Scotland. North of Scotland feeders, especially, prepare the great majority of their fat cattle for consignment in the dead meat form to Smithfield, and owing to the superior manner in which cattle from these districts are finished, the dressed carcasses sent from there command the highest prices in the market and are known as Prime Scotch. Owing to its situation in the midst of the large fattening counties, and its convenience as a railway and shipping centre, Aberdeen is generally regarded as the most important seat of the industry in the North of Scotland. Large quantities of dead meat are sent week by week during the year from here to Smithfield, and though at a number of other centres a considerable amount of slaughtering for the dispatch of dressed carcasses to London is done, the trade is chiefly concentrated and developed around Aberdeen itself. The latter place was in consequence selected as the most suitable position from which to conduct an inquiry into the nature of the dead meat trade in the North of Scotland.

The greatest part of the Scotch meat trade with Smithfield is carried on by a class of men who buy the cattle when fat either directly from the farmers, or at the local auction marts, and, after slaughtering, consign the dressed carcasses to salesmen in Smithfield for disposal. These men are the mainstay of the fat cattle trade in the North of Scotland, and may

**The Trade
Between Scotland
and Smithfield.**

**The Class of
Persons Engaged
in the Trade.**

be described as Dead Meat Consignors. In addition to these, however, certain classes of butchers occasionally send to London consignments of dead meat, especially the more valuable portions of the carcasses which can be more profitably disposed of at Smithfield than locally. The business is, in the main, however, largely monopolised by the Dead Meat Consignors, though a number of fleshers from time to time take part in the trade, according as the circumstances of their particular business prescribe, or as the current prices in the London market offer inducement. Special prominence, it may be mentioned, is given in the daily Press to the prevailing quotations for dead meat at Smithfield, and in this way consignors are enabled to follow the trend of the market closely, and to decide on the most advantageous times to forward supplies. So far as could be ascertained, there are no co-operative societies engaged in the trade. A large number of farmers in Inverness and Ross-shire kill and send on their mutton dressed for sale, but very few take part in the dead cattle trade with London. In an occasional instance, where farmers are dissatisfied with the live prices obtaining locally, the cattle may be entrusted to commission butchers who, for a charge of 4/- to 5/- per head, will dress and work them up for the London market.

The question of determining the amount of capital individually involved by dead meat consignors was, owing to the nature of the trade, found to present considerable difficulty. The business unquestionably represents a considerable amount of floating capital, but it is not easy to locate the persons actually responsible for it at any particular stage. An illustration will make this matter clear. A butcher starts business with the intention of consigning the valuable hindquarter portions to Smithfield, and of retailing the forequarters in his shop. For the purpose of fitting up the latter he may require an initial capital of from £150 to £200. This expense over, he attends one of the local auction marts and buys cattle to the extent of £200. The auction mart people, if they rely on the man's capacity and stability, give him the cattle on a week's credit. Within this time he has the cattle disposed of, and with the price realised, is enabled to pay the amount due at the week end, and is in a position to purchase again. Meanwhile he may have had similar transactions with one or two other marts carried on in the same manner. From this it will be seen that a man with comparatively small capital may be responsible for a large turnover of money from week to week; the money value of the

THE DEAD MEAT TRADE.



Fig. 1.—First Prize Irish Bred two-year-old at Inverurie Christmas Show and Sale.

THE DEAD MEAT TRADE.

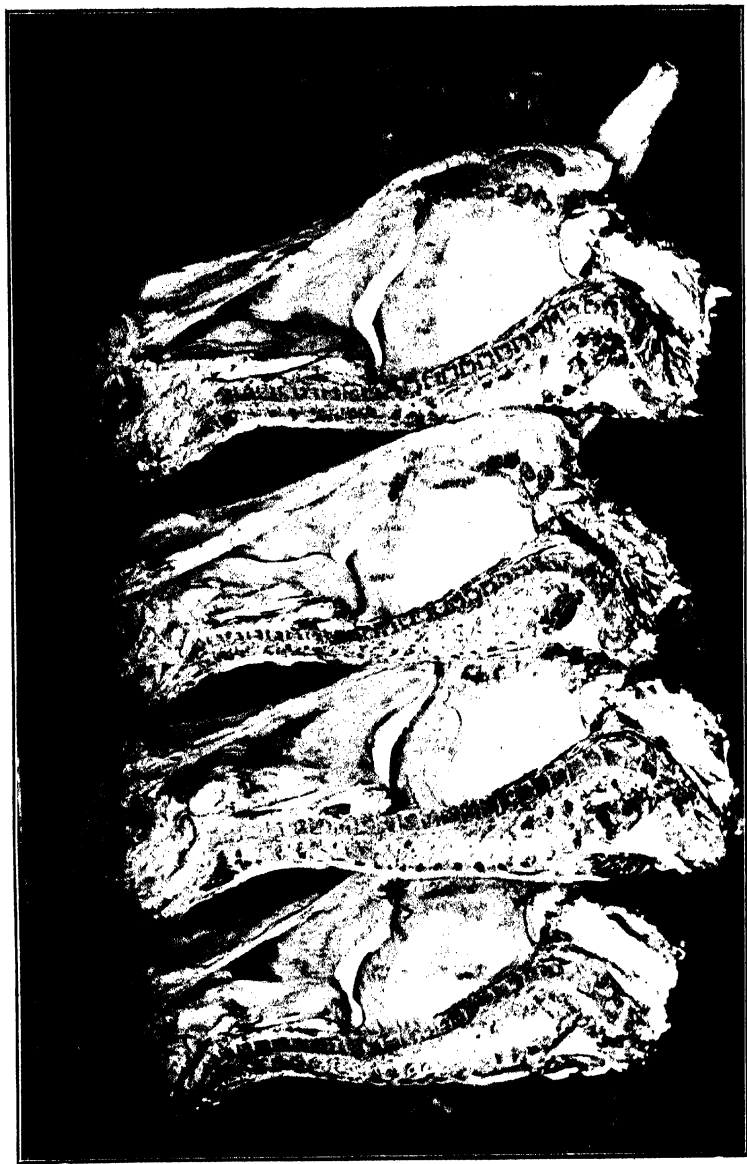


Fig. 2.—Long Sides—First Prize Meat for the London Market.

cattle handled is large, but the responsibility for the time being rests on the auction mart companies. Credit in fat cattle given to such men by the auction marts is, however, very rarely abused, and the risk of loss found to be slight.

The class of cattle which Scotch feeders prefer for feeding are the ordinary Aberdeen-Angus type of the country. These, as a rule, are short-legged, level-backed early maturing beasts, with fine coats, and when finished carrying the flesh very evenly distributed all over. Black polled cattle, whether pure bred or first crosses, are regarded as ideal beef animals,

The Most Suitable Type of Cattle.

and it is claimed for them that they respond so much better to feeding than the Irish imported bullocks, that they can be sold off considerably earlier, and on an average will yield a higher percentage of dressed carcase to live weight. At the same time large numbers of Irish store cattle suitable for feeding are annually brought into all the counties engaged in the fattening industry. These Irish cattle are mostly shorthorn crosses of good quality, and dealers who supply these districts from Ireland find that there is no demand from feeders except for the very best quality of stores, strong, level-backed beasts with well-sprung ribs, good pliant hides, and a general appearance of growthiness. Most Scotch feeders prefer to get Irish cattle as young as possible, and a large number of calves ranging from seven to nine months old, and, at prices averaging from £5 15s. to £6 10s., are imported in the late autumn months every year. The preference given for young cattle of this age is evidently due to the fact that Scotch feeders keep growth continuous during the first winter by careful and generous feeding; in this way the desirable calf flesh is maintained, and a healthy development of the whole frame is promoted, more especially at a stage when any check in growth or poorness of condition through insufficient feeding or careless treatment marks itself most detrimentally to the profitable keep of the animal afterwards. In addition to these weaned calves or small "stirks," which range in price from £4 10s. to £7 15s., a great number of Irish stores are also bought in each year for fattening. These vary in age from 15 to 20 months' old, and cost on an average from £8 to £12 according to quality. In either case, Irish-reared cattle are usually kept over by Scotch feeders till fit for disposal in the fat stock market at the age of 2 or 2½ years old. Sold at this stage, these cattle, if well finished, will make from 10 to 11 cwt. live weight, and bring from £20 to £22 in the auction mart ring. The opinion prevails generally that the younger

class of Irish cattle return the most profit, and one instance was given of a Scotch feeder who purchased in the late autumn a bunch of sixteen Irish-reared heifer calves which, when sold at about two years old, made an average price of £21 each. Contrasting the black polled cattle with the imported Irish shorthorn-cross beasts, it was conceded that given similar feeding and treatment, little difference in the weights might be expected; the black cattle will, however, reach maximum growth earlier, and can be finished more quickly, whereas the Irish cattle, if slower in growth, have a greater scope, and after a certain stage in feeding—when the black cattle are fully finished for killing—continue to increase materially in weight, and ultimately produce a heavier carcase. The counties in which the infeeding of cattle is most extensively carried on are Forfar, Kincardine, Aberdeen, Banff, Moray, Nairn, East Ross, Inverness, and, to a small extent, Sutherland. These, it will be noticed, constitute the eastern portion of North Scotland, and thus corroborate the statement made, that if a line were drawn direct North and South through the Northern half of Scotland, the cattle in the country would be found mainly to the east of this imaginary division, and the sheep to the west of it. The extent to which cattle-rearing enters into the agriculture of this part of Scotland may indeed be judged from the fact that Aberdeenshire alone contains one-seventh to one-eighth of all the cattle in Scotland. Although Aberdeen by virtue of its position is the largest centre of the dead meat trade, a considerable amount of cattle throughout the feeding districts are also killed at smaller places, such as Keith and Inverurie.

Aberdeen as a Killing Centre. In Aberdeen the chief slaughter-house belongs to the butchers of the city, who have formed an Incorporated Society known as the Fleshers' Incorporation. At this slaughter-house over 25,000 cattle are killed every year. Many of the cattle intended for the London market are here killed and dressed; the hands employed are very expert, and two men will have an animal killed and the carcase dressed within half-an-hour. After the hide has been taken off and the various descriptions of offal removed, the carcase is split down the centre of the back into two separate halves or sides. This cleaving is done in a special way with the hatchet, and the saw, which is generally used for severing the sides, is not employed. This it is claimed by Scotch butchers gives the dressed side a better appearance, and is supposed in the trade to furnish a proof that the beef is genuine Scotch. The two

THE DEAD MEAT TRADE.

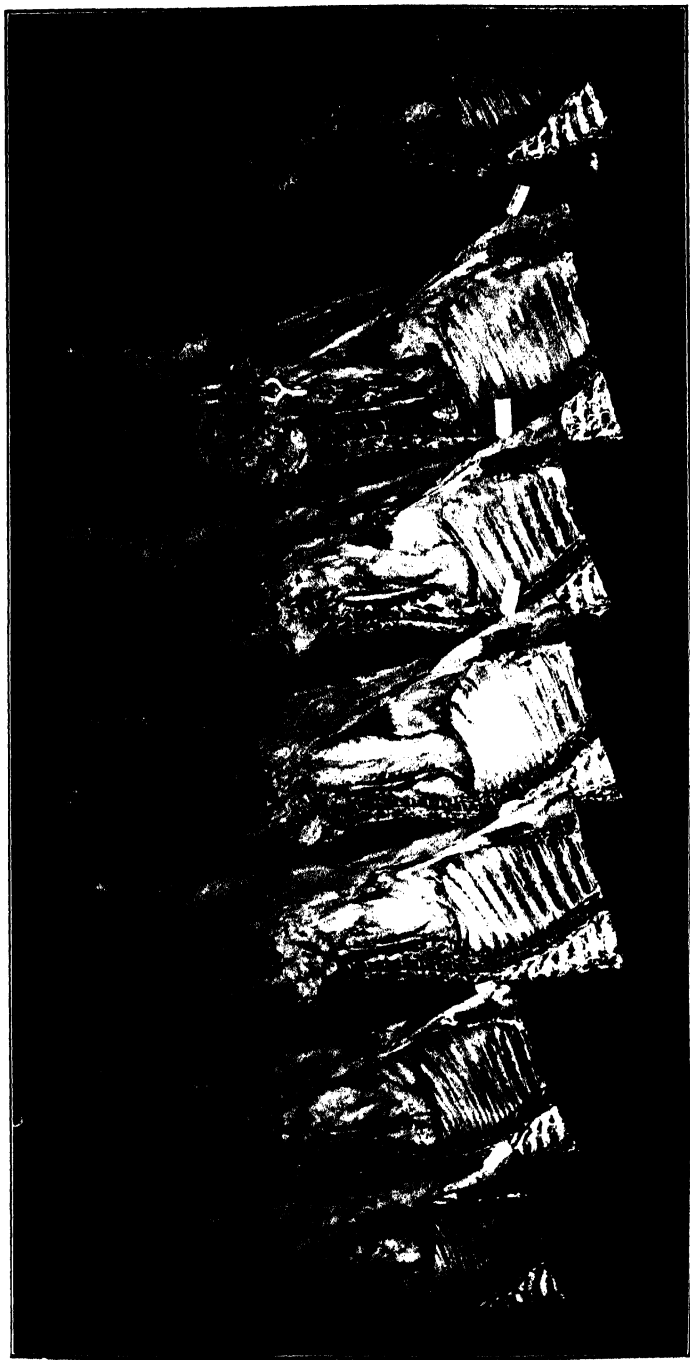


Fig. 3.—Short Sides as dressed for the London Market.

THE DEAD MEAT TRADE.

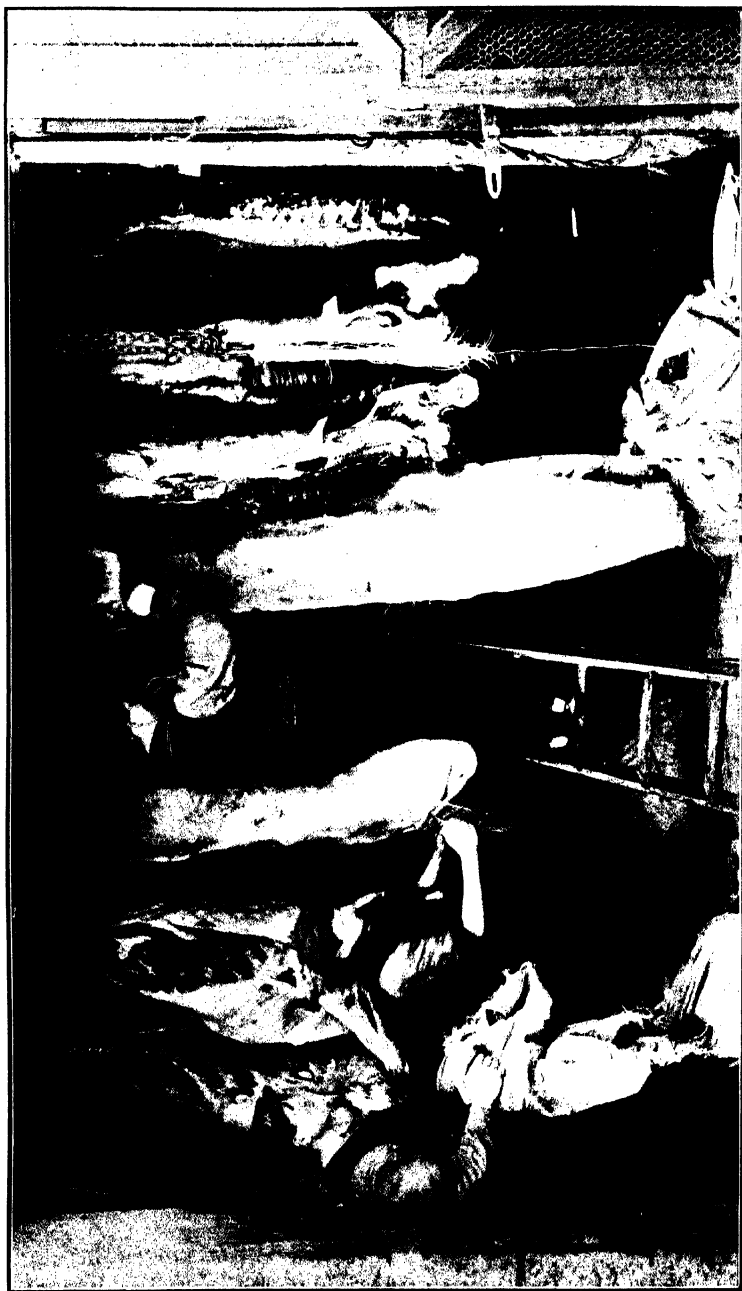


Fig. 4.—Packing the Sides in canvas for despatch to London.

sides are then weighed in order to determine the proportion of dead weight carcase, and are allowed to hang for twenty-four hours in order to cool and dry out.

Carcases of beef are sent to Smithfield either as long sides or as short sides—more frequently referred to among those in the trade as “shorts.” The long side represents the entire half of the carcase; the short side means that the forequarter, which comprises the rougher and less valuable portion of the meat, has been removed, generally by cutting the side square across behind the shoulder and between the second and third ribs. On the day after killing, these long sides, or, if cut, short sides, are prepared for conveyance to London. A distinct white linen label showing the name and address of the consignor and also the name and address of the consignee is affixed to the ribs on the inner side of the carcase. The carcase is then securely wrapped round with strong, coarse packing canvas and neatly sewn up with cord, after which, for the direction of the carriers, a similar label is affixed outside. This done, the sides, which usually weigh from 3 to $3\frac{1}{2}$ cwt., are released from the overhead hooks, carried out on the shoulders of two men, and neatly arranged in rows on lorries which convey them to the railway station. Aberdeen consignors have a choice of sending their meat by two railway lines—the Caledonian or the North British. If by the former it passes over the London and North Western Railway system to London, if by the latter over the Midland Railway system. The freight charge by either of these lines from Aberdeen (523 miles to London) is £3 17s. 6d. per ton plus 4s. 4d. per ton for market tolls or “pitching,” *i.e.*, loading and unloading the sides on vans for conveyance to the stalls of the commission agents in Smithfield.

Formerly the sides of dead meat were piled on the floor of the railway vans, one on top of the other, but as this caused an amount of damage to the beef, more especially in warm weather, the railway companies have made provision for each side to be hung separately while under conveyance. For this purpose the special meat wagons used are fitted with a series of iron bars across the top. On these run movable iron hooks from which the sides are suspended, and consequently saved from any danger of injury. Four sides are usually hung in a row to each cross-bar, and an ordinary sized six-ton wagon will have space for thirty sides. To ensure cleanliness in handling, the floors of the wagons are coated with a substantial layer of fresh straw. During the summer season special refrigerating vans of this

type are provided. The time taken in transport between Aberdeen and London is about twenty-seven hours: thus dead meat sides loaded in Aberdeen during the day leave there at 7 p.m., arrive in London the following night at 9.30 p.m.; and are delivered in Smithfield market the next morning. During the winter months it is estimated that fully one-third of the dead meat sent from Aberdeen is consigned by the steamers of the Aberdeen Steam Navigation Company. There is a tri-weekly service of those vessels direct to London—the landing wharf being at Limehouse, within easy carting distance from Smithfield, and though the freight is only £2 10s. per ton—considerably less than by rail—and the time in transit only three hours longer, there is the drawback that no provision is made to transport the sides hanging, nor are there any refrigerating chambers for use in hot, close weather. For these reasons, even though the biggest bulk of the dead meat trade with London is done from November up till the last weeks in May, the two railway companies command by far the larger portion of the traffic. In this connection it may be mentioned that the comparative rail and steamboat rates for live cattle from Aberdeen to London by the same routes are 25s. and 16s. per head respectively. A comparison of the railway rates for the two forms shows that in the case of a 10 cwt. animal, which kills 6 cwt. dressed beef, the latter will be conveyed for 1s. 9d. less than the freight for the same animal if sent alive.

How the Meat is Classed at Smithfield. The destination of all the dead meat sent from the North of Scotland to London is, as already stated, Smithfield market. Smithfield market was established by the Corporation of the City of London as a centre of supply for the retail butchers of London. It is very centrally situated in the city, and consists of a series of large glass-roofed halls containing rows of shops or stalls for exposing the meat for sale. These stalls are tenanted by firms who sell beef on commission or who kill largely and dispose of their own dressed carcasses. The market opens at a very early hour in the morning, and the retail butchers from all parts of the city are busy purchasing their requirements from 4 o'clock a.m. onwards. Each class of butcher buys the quality of beef—the particular portion of the carcasses which the nature of his trade requires. Thus in the line of quality he can choose from Prime Scotch, English, English-killed American, American chilled, South American chilled, or South American frozen: if his is a select trade he may be looking

THE DEAD MEAT TRADE.

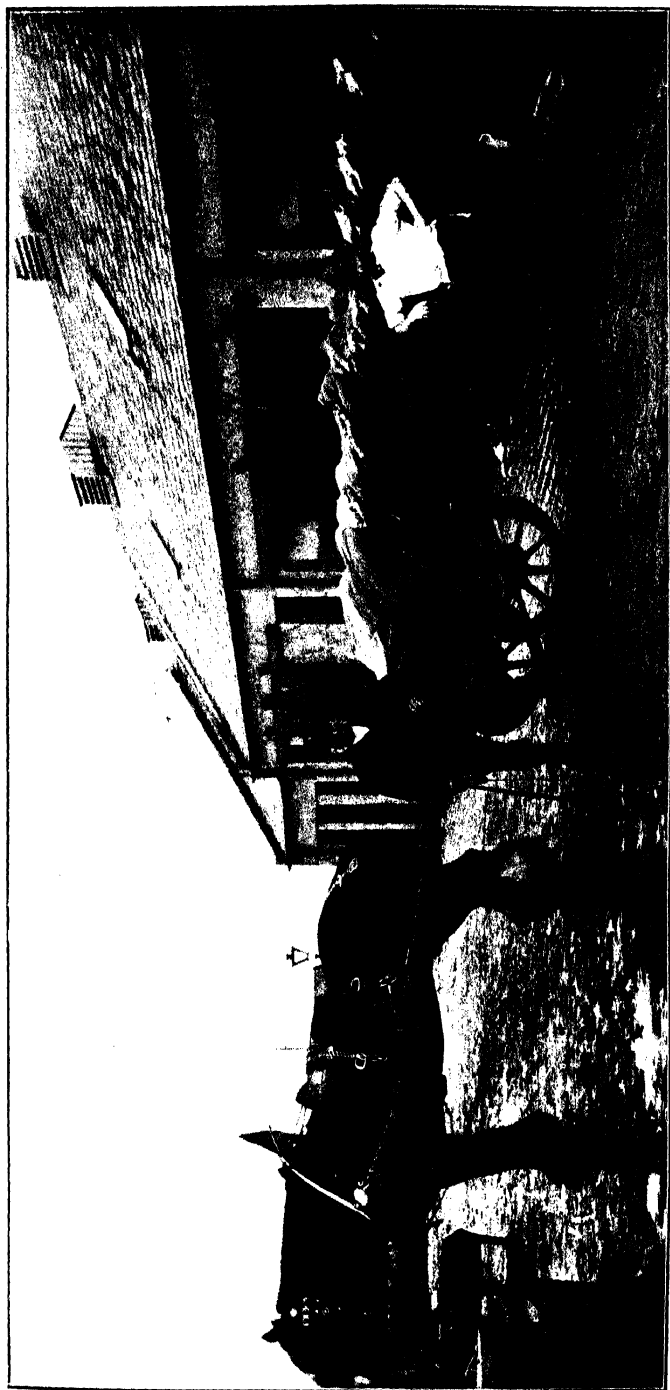


Fig. 5.—Leaving the Slaughter-house.

THE DEAD MEAT TRADE.



Fig. 6.—Loading the Dead Meat in special railway vans.

to buy hindquarters only: on the other hand, if his trade is chiefly with the working class, he will confine his purchases to the cheap forequarters or the rough boiling portions such as the flanks. The rate of prices which prevails in the market from day to day appears to be regulated largely on the basis of supply and demand. Beef in Smithfield is bought and sold at so much per stone of 8 lbs. Quotations according to quality are usually given in terms of this weight. The following report, taken from an Aberdeen paper, shows the rates for the different kinds of meat on the markets for one particular day (December 7th):—

“London (Central).—A fairly good quality was available this morning and had a fair demand at firm prices. Arrivals comprised 60 tons Scotch, 400 Liverpool sides, 800 American refrigerated hindquarters, and 700 forequarters, also 2,700 Argentine chilled hindquarters and forequarters. Quotations:—Scotch sides, 4s. 2d. to 4s. 6d.; short sides, 4s. 8d. to 5s.; English, 3s. 9d. to 3s. 11d.; American, Deptford killed, primes, 3s. 7d. to 3s. 9d.; seconds, 3s. 3d. to 3s. 5d.; Liverpool firsts, 3s. 6d. to 3s. 8d.; seconds, 3s. 3d. to 3s. 6d.; American refrigerated hindquarters, 3s. 8d. to 4s. 4d.; seconds, 3s. 2d. to 3s. 6d.; forequarters, 2s. 6d. to 2s. 8d.; seconds, 2s. 2d. to 2s. 5d.; Argentine chilled hindquarters, 2s. 7d. to 3s.; forequarters, 2s. 1d. to 2s. 3d.”

Scotch beef, it will be seen, commands the highest price, reaching 7½d. per lb., or 70s. per cwt. for the short sides. The long sides are generally from ½d. to ¾d. per lb., or 6d. per Smithfield stone (8 lbs.), lower in value than shorts, though in some seasons the sides of choice heifers will make as much as the hindquarters of rough bullocks. Should the difference be less than this, consignors do not usually consider it advisable to take off the forequarters, but forward the whole carcasses. All the Scotch supply is consigned to the different commission salesmen in the market who dispose of it at a commission of 2½ per cent. The top price which Scotch beef fetches in the London market is undoubtedly due to the superior degree of finish to which the cattle are brought before being killed, as well as the way in which the carcasses are dressed, and put on the market. Scotch feeders and consignors fully recognise that only animals which have been really well finished are suitable for the Smithfield trade, and so thoroughly is this appreciated and acted upon throughout the chief supplying counties, that the quality of the “Prime Scotch” sent to London remains surprisingly uniform throughout the year.

One of the most important branches of the dead meat trade is that which deals with the offal. Thus at a centre like Aberdeen, where so many cattle are slaughtered every year, a large number of subsidiary industries are directly dependent on the supply of offal which the local slaughtering affords. Some parts of the offal are, no doubt, disposed of to other centres. Thus the hoofs are sent to Lancashire for glue-making, the intestines are forwarded to a Glasgow firm for sausage-making, and the hides are sold at special weekly sales to representatives from the chief tanning centres of the midlands; on the other hand the horns, which go away attached to the hides, find their way back to be manufactured into combs, etc., by a local company; a large proportion of the tallow is utilised locally for soap-making, and such bones as may be on hand find a ready market from two large manure manufacturing firms. Besides this, there are various ways in which edible offal is worked up for local consumption to the advantage of both producer and consumer. In Aberdeen the following classes of firms have been largely called into being through the existence of the dead meat industry:—

Hide and Tallow Merchants,
Comb Makers,
Soap and Candle Makers,
Manure Manufacturers,
Oil Cake Manufacturers,
Skinner and Wool Merchants.

The value of the offal, which includes hides and horns, tallow, head, tongue, tail, feet, kidneys, heart, liver, tripe, windpipe, spleen, blood—in fact everything except the dressed carcase, is estimated by Scotch butchers at so much per cwt. of dead weight carcase. This estimate ranges from 7s. 6d. to 10s. per cwt., but 8s. was given as representing most nearly the average value, taking one class of cattle with another. Thus the offal of a bullock weighing 10½ or 11 cwts., which would kill at about 6 cwts. of dressed beef, would be valued at approximately £2 8s. Another method of estimating the offal value suggests itself in finding the approximate commercial value of each of the different parts thus:—

Hide and Horns, ...	70 lbs. at 4½d.	...	£1	6	3
Tallow, ...	64 „ at 3d.	...	0	16	0
Head, Tongue, Tail, ...	35 „	...	0	6	0
Feet, ...	20 „	...	0	0	10
Kidneys (pair), ...	2½ „	...	0	1	6
Back Collop, ...	2 „	...	0	1	0
Heart, ...	6 „	...	0	1	0
Liver, Tripe, etc., ...	14 „	...	0	2	6
Blood, ...	30 „	...	0	1	0
Stomach entrails (empty), ...	20 „	...	0	1	9
<hr/>					
£2 17 10					

It will thus be seen that the average value of the offal from a fat beast ranges from £2 8s. to £3 according to the degree in which the different parts can be utilised and worked up; in London market it is generally accounted that the value of the offal from cattle classed as prime beef approximates to 50s. per head.

In view of the possibility of starting a dead meat trade between Ireland and Smithfield, it may be well to draw attention to one or two features of the industry as it is carried on in Scotland which will require to be kept clearly in mind by Irish farmers if the effort to develop a profitable trade in really first

Conditions of Success.

class meat is successfully accomplished.

(1) In the first instance, attention will need to be given to the quality of the animals kept and their suitability for beef production. The North of Scotland possesses animals of an admirable beef type in the native Aberdeen Angus and their crosses. The demand in London at present is not so much for size as quality; the black polled cattle, inasmuch as they mature early and are profitable to feed, and if well finished give a high proportion of dressed carcase, are especially suited to both breeder and consumer. At the same time, from inquiries made, the Irish-reared cattle which are brought over as stores to the feeding districts, can be equally well and profitably fattened for the London market. Indeed, according to an estimate given, fully one-third of the cattle which are killed in Scotland and disposed of in Smithfield market as prime Scotch, are Irish-reared. Inasmuch as these cattle represent the best quality of Irish stores, it is evident that with care in breeding and grading there is nothing to prevent Irish farmers from producing cattle of a type and quality suitable for marketing in dead meat form at Smithfield.

(2) Another feature of the cattle feeding system in Scotland is the early stage at which the animals are finished and ready to be disposed of as fat. No doubt many of the cattle are naturally of the quick maturing type, but there can be little question that much of the success in this respect is due to the treatment and feeding given to the animals during their first year's wintering. Feeders generally recognise the value of the calf flesh for early fattening and take care that their young animals do not lose it either through unsuitable housing or insufficient feeding. The system practised in Ireland represents a very unfavourable contrast, and is one feature of the Irish cattle industry which requires to be essentially improved, more especially if success in profitable fattening is to be afterwards obtained.

(3) The extra finish of Scotch-fed cattle, coupled with quality, has earned for Scotch beef the high reputation which it now holds in the London market. Scotch feeders recognise that it is the last quarter hundredweight of beef they can put on their cattle at the finishing stage that regulates the price of the whole carcase, and consequently determines the ultimate profit. Animals to be disposed of profitably in Smithfield must be well finished; there is no demand for half fat or poorly finished beasts, these indeed can be more profitably disposed of elsewhere. As a rule, prime finished cattle are expected to dress 64 per cent. of live carcase weight, and the majority of the animals sold as Prime Scotch make this average. Though a certain proportion of the fat cattle which are sold in the leading Irish markets may be classed as prime finished, the standard of finish is much below that of Scotch-fed beasts, hence it must be understood clearly that unless Irish feeders are prepared not only to be careful to maintain the quality of their cattle and to keep them in continuous growth, but to bring them to the desired degree of finish, the possibilities of developing a really profitable connection for Irish beef in the Smithfield market are slight.

From what has been stated previously, it will be recognised that the lower cost of carriage for transporting the dead meat to market, as well as the advantage of having so much valuable offal for disposal, and the possibility of utilising it to great local advantage, gives good ground for hopefully regarding the feasibility of developing a dead meat trade in Ireland. At the same time it is apparent that adequate and suitable transit facilities from the carrying companies, and strict attention to the several features which have made the system so profitable to Scotch feeders for the disposal of their cattle, are two of the most essential requirements for success.

THE DEAD MEAT TRADE.

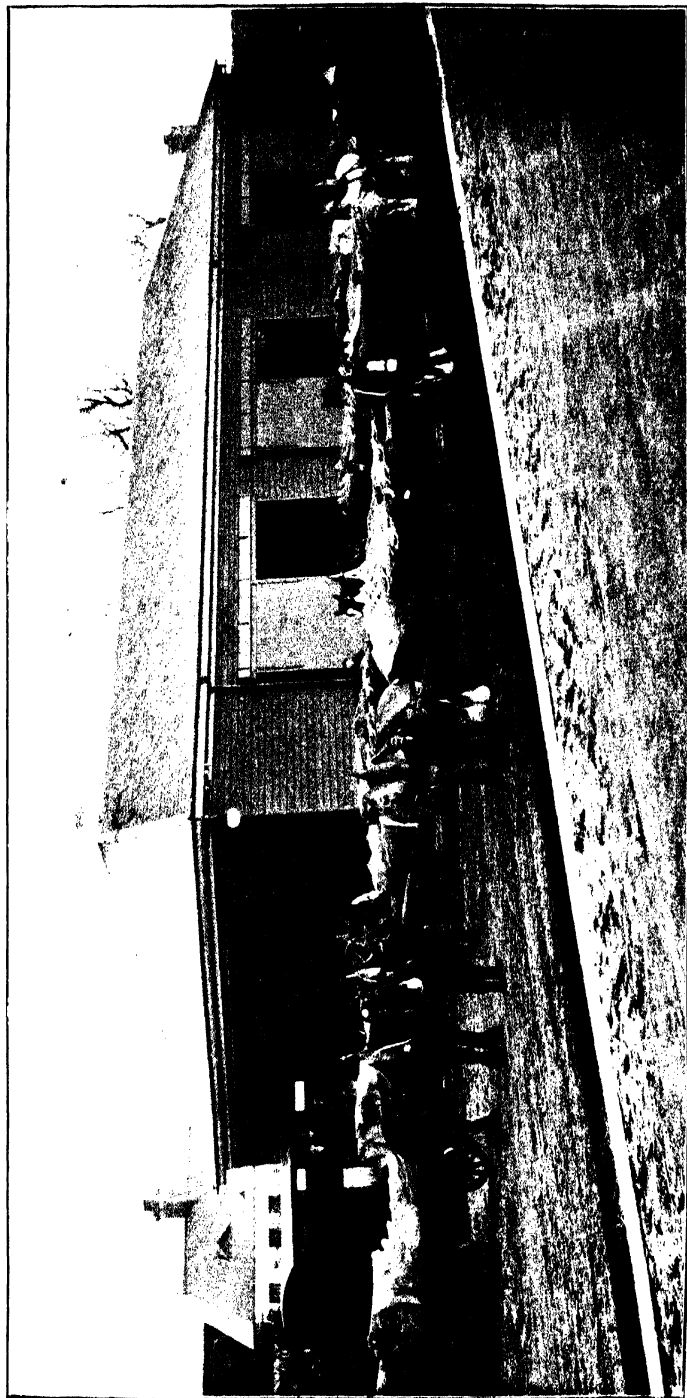


Fig. 7.—Lorries with Dead Meat for the London Market at Railway Station.

THE DANISH HEATH SOCIETY.

Of the various directions in which progress has been made by Denmark during the last century, the extension and development of the area under woods and plantations, particularly in Jutland, is possibly the most noteworthy. In 1860, the total area of woodland in Jutland was about 156,000 acres, while in 1902, the area returned as planted was 313,000 acres, of which 60,000 acres belonged to the State, leaving some 250,000 acres in the hands of private owners, institutions, societies, etc. The principal increase is stated to have taken place in West Jutland, a portion of the kingdom proverbial for the sterility of its soil and the bleakness of its climate.

It cannot fail, therefore, to interest those who favour the extension of forestry in Ireland, to show the means by which this increase of 100 per cent. in the plantation area of Jutland has been effected. Although an exact parallel cannot be drawn between the climatic and soil conditions prevailing in West Jutland and the West of Ireland, poverty of surface and exposure to strong winds are common to both, and the difficulties of the planter have to be overcome by similar means. It is, however, the machinery employed in Denmark, to bring about the increase referred to, that deserves the most careful attention from the rural economist in Ireland, and the following memorandum furnishes an account of the object, administration and work of the *Danske Hedeselskab*, or "Danish Heath Society," through the agency of which West Jutland is rapidly being converted from a vast, undulating plain of heath, drifting sand and bleak moorland, to a picturesque and well sheltered country.

MEMORANDUM ON THE *DANSKE HEDESELSKAB*.

(Danish Heath Society).

The *Danske Hedeselskab*, or Danish Heath Society, was primarily the outcome of the great wave of patriotic feeling which swept over Denmark after the disastrous war of 1864, when North Schleswig passed into the hands of the Germans. The loss of Schleswig was a bitter blow to the Danes, but it had the effect of rousing them to a very active patriotism which, to some extent, found its expression in the creation of the *Hedeselskab*. "What we have lost

outside, let us find within," they said, and set themselves forthwith to exploit to the uttermost their remaining territory.

The Heath Society, founded in 1866 through the initiative of Colonel E. M. Dalgas, now one of Denmark's

History. national heroes, was not, however, the first effort made to solve the problem of the Jutland moors,

which, in 1860, covered almost one quarter of its total area. As early as 1759 an unsuccessful attempt had been made to induce German settlers to undertake the reclamation of the moors, and the Danish Government had from time to time made efforts at plantation, but the problem was never effectively grappled with until taken up by the people themselves in the heat of their patriotic enthusiasm. Thousands of people of every class came forward in support of Dalgas and his scheme, and subscriptions and donations were given by many communal authorities, savings banks, joint stock companies and other bodies. The public support given to the Society is indicated by the fact that, since its creation, it has received in this way over $3\frac{1}{2}$ millions of crowns. As an agent of the State, the Heath Society administers large sums of public money, and besides this, it also receives direct State support in the form of an annual grant in aid of its work. The total sum advanced by the State in 1907-8 was 427,000 Kr., or about £23,500. Of this sum, 128,100 Kr. was in aid of the Society's work (purchase of land, plantation and reclamation work, etc.), and 298,900 Kr. was intended to be administered through the agency of the Society for plantations not situated on the Society's own property.

The object of the Heath Society is to encourage the cultivation of the heaths of Denmark, and to give free help and

Objects. advice on the subject to all who desire it. The measures adopted by the Society are chiefly the

following:—Cultivation of heaths where possible, afforestation where land is poor, drainage of marshes and irrigation of dry meadows, supply of marl and lime for improving the soil, distribution of young trees at cheap rates, creation of shelter belts and protective woods, and, in general, the utilisation of moorland by every possible means. Plans and estimates are supplied free to all persons or societies wishing to plant, and the work is chiefly done by the people themselves under the supervision and direction of the Society's officers.

The Society's field of action, formerly confined to Jutland, now extends over the whole Danish kingdom. Any person, i.e., any man, woman, society or institution, may become a member on payment of an annual subscription of 4 Kr. (4s. 6d.), or a capital sum

THE DANISH HEATH SOCIETY.

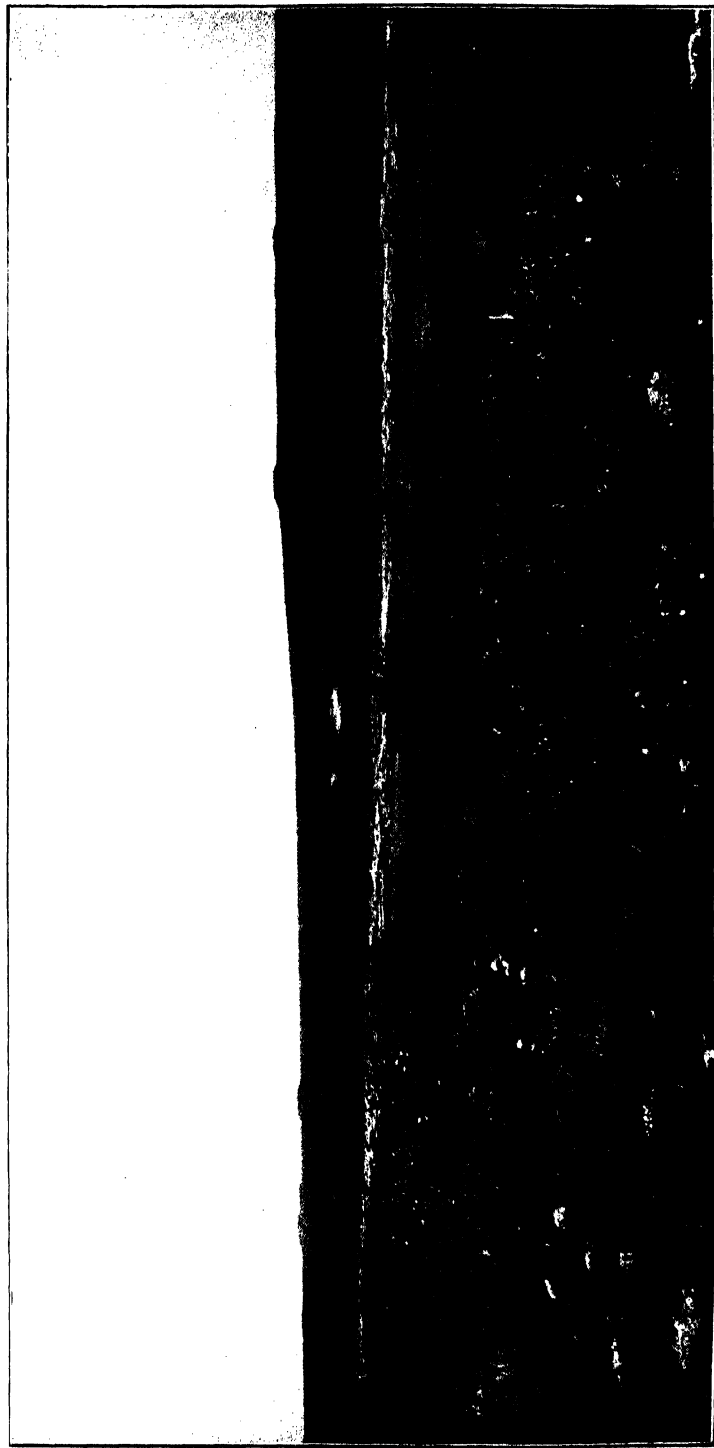


Fig 1.—Typical heath land in Jutland before planting.

THE DANISH HEATH SOCIETY.

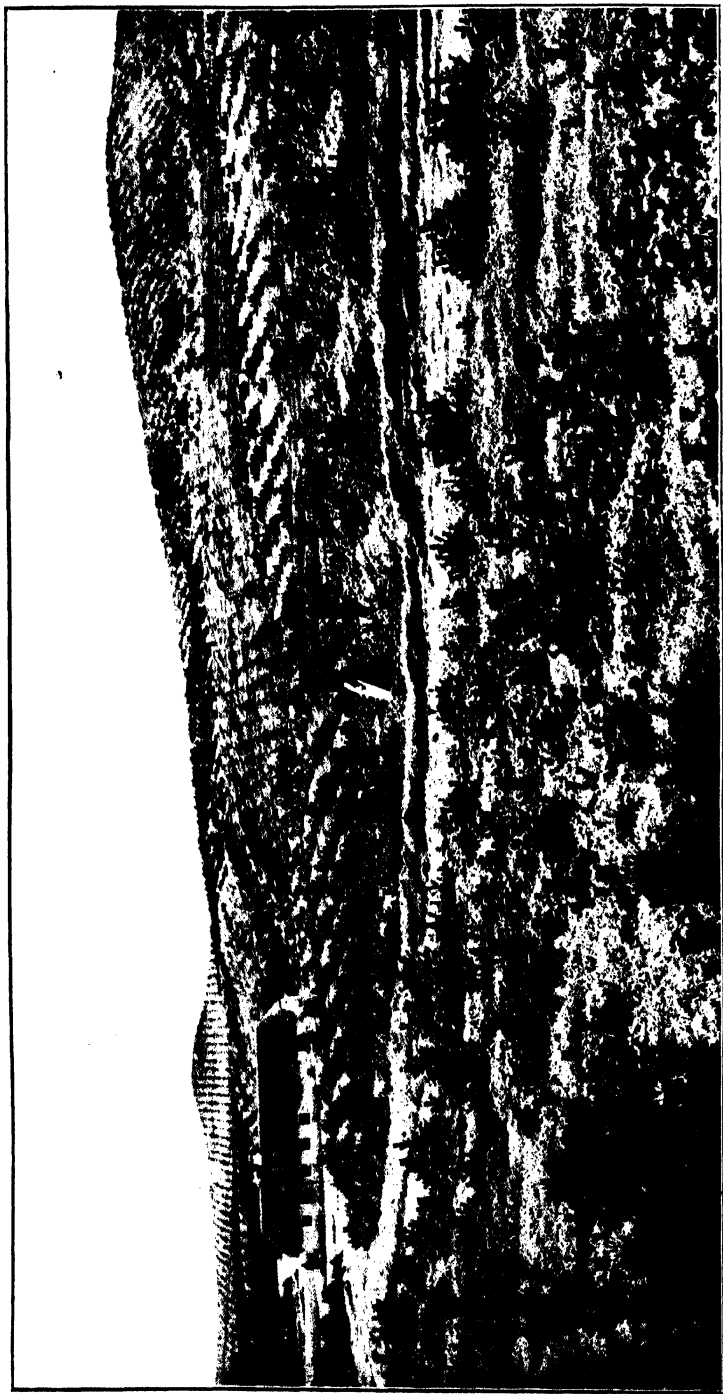


Fig. 2.—Heath land, five years after planting with *Pinus sylvestris* and *Pinus montana*. Spruce in the background.

of 100 Kr. Larger sums are, of course, welcomed. The annual subscriptions from members average 18,000 Kr., and the present number of members is 4,657.

The Society is managed by a Council of from 20 to 35 members and an Executive Committee of three. The services of both councillors and committee-men are honorary, but travelling expenses and disbursements on behalf of the Society are refunded.

Dalgas used to predict that a time would come when a man could walk through forests from the Konge river to the Lim Fjord, in other words, from end to end of Jutland. This prophecy is still far from fulfilment, but so great was the energy with which the Society set to work that fears were raised in certain quarters (notably among botanists) lest there should soon be no more heaths in Jutland. As the military authorities happened at the time to require a new ground for gunnery practice, they united forces with the botanists and a stretch of heath was purchased which is to lie untouched forever, a curious memorial to the activity aroused by Dalgas in the early days of the movement.

The total number of plantations under the direction of the Society is about 1,790, and they cover 116,635 Tdr. Land

Plantations. (about 158,624 acres); of this area 72,048 Tdr.

Land has already been fully planted. The greater part of this land belongs to private owners or planting societies, who carry on the work under the supervision and with the help of the Heath Society. The Society itself also owns some 11,167 Tdr. Land (about 15,187 acres), and of this more than one-half has now been planted. For administrative purposes, plantations are ranged under two classes, A and B. The A plantations have a minimum area of 10 Tdr. Land (about 13½ acres), but *only when conditions as to configuration and available shelter are satisfactory*. The B plantations are plots of more than 10 Tdr. Land, which for any reason cannot be included under Class A.

Since 1885, the cost of plantation has been partly borne by the State. The State grant is awarded subject to a

State Aid. declaration by the owner of the woods that they shall be kept as enclosed forest by himself and his successors. In a few instances, however, this declaration has been dispensed with in the case of B plantations.

The Government grant may, therefore, be regarded as payment for a servitude laid upon woodland property, so that it cannot at any time be laid waste, but must be maintained as forest. The grant in the case of A plantations amounts to one-third of the expenditure on

young trees, implements, fences, roads, clearing and drainage. One-half of the grant is withheld until 10 Tdr. Land has been planted in one piece. After that one-tenth of the grant is kept back for any subsequent improvements which may be necessary, and is paid out (*minus* cost of such improvements) when the plantation is complete and the duty of maintaining it as a forest becomes obligatory. The grant made for this purpose in 1907 amounted to 40,000 Kr. Since the condition of permanence was exacted, many farmers and "Husmaend" or crofters have planted a part of their land with timber, so that there are now many small woods in Jutland which are of the greatest importance to agriculture on account of the shelter which they afford. The State grant to B plantations amounts to one-half the cost of the young trees planted.

The Danish Plantation Insurance Society undertakes to insure the cost of replanting woods accidentally destroyed by fire. An entrance fee of 25 öre per Td. Land (with minimum fee of 1 Kr.) is charged, and the annual insurance premium is 8 öre per Td. Land for plantations of mountain pine, and 12 öre per Td. Land for other conifers, but the premium in no case must be less than 25 öre.

In the majority of cases the Society sought to establish forests of spruce, but it was found that a good deal of mountain pine (*Pinus montana*) and white American spruce (*Picea alba*) had to be planted as well, because these varieties thrive better in the sour moorland soil than does the spruce. Dalgas was fond of calling the mountain pine the "nursing mother" of the spruce, and he used also to say that it acted as a "foot-warmer" for the latter. On the other hand, when mountain pine is planted alone, the problem arises as to how the wood (which cannot be used for heavy timber) can be turned into money. The Industrial Committee of the Heath Society has solved this problem in several ways. In some cases charcoal is burnt and tar extracted. From about ten plantations charcoal to the value of 20,000 Kr. is annually sold, and nineteen small tar ovens on the same plantations turn out annually 80,000 to 90,000 lbs. of tar, value 5,000 Kr. Mountain pine can also be used for making fence-poles. From a single plantation some 30,000 of these were sold for about 3,500 Kr. in 1906-07. The

NOTE.--1 Kr. = 1s. 1½d.
1 öre = (about) ¼d.
1 Td. Land = 1.36 acres.

* 1 Danish lb. = 1.102 English lbs.

THE DANISH HEATH SOCIETY.

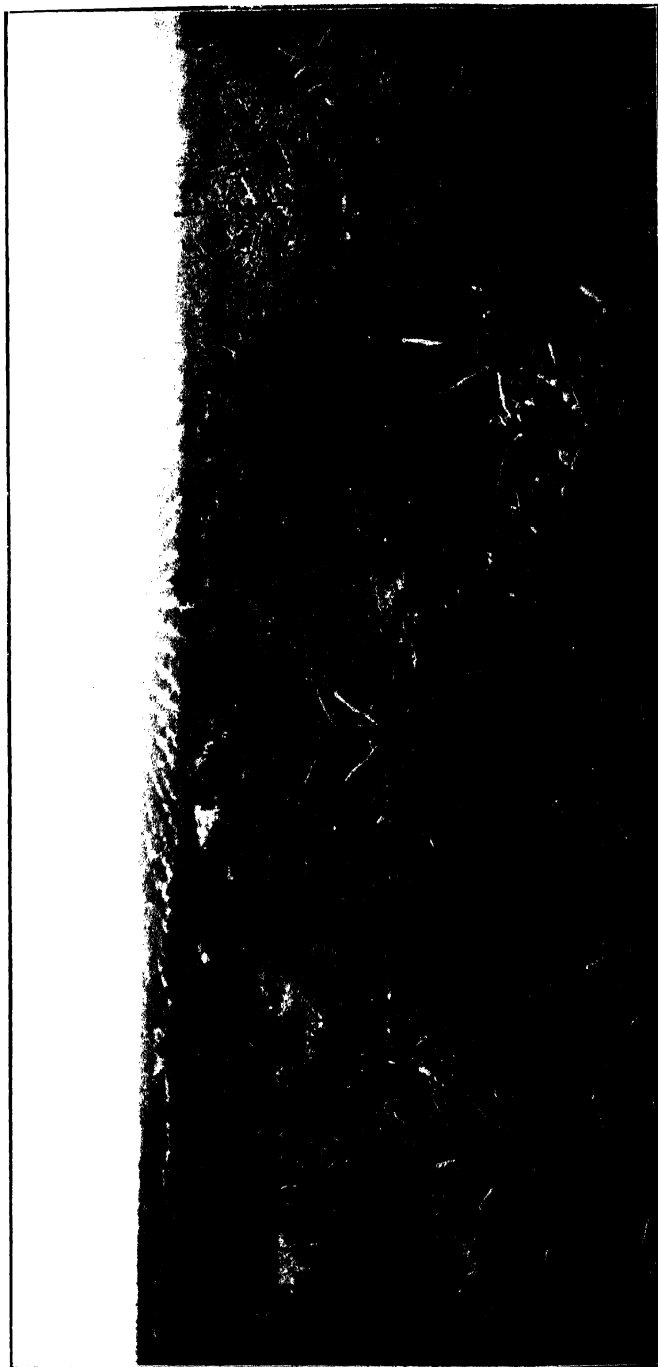


Fig. 3.—Spruce Plantation, seventeen years of age, on good heath land. Ground sub-soil ploughed previous to planting.

THE DANISH HEATH SOCIETY.

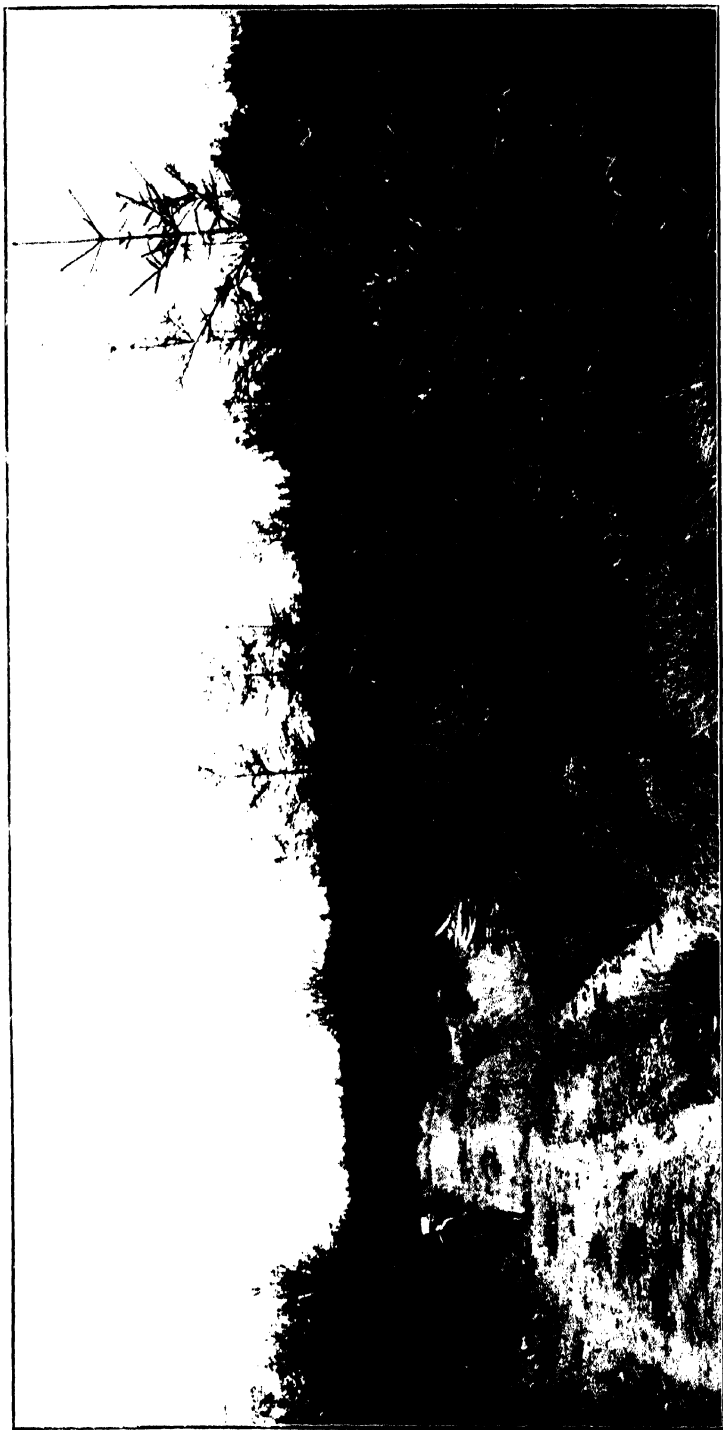


Fig. 4.—Spruce Plantation, eight years of age, on old grass land.

Heath Society, in order to facilitate the disposal of forest produce, has organised a distributing society near Herning, which undertakes the sale of charcoal, tar, etc., on behalf of owners of plantations.

Another valuable asset in the way of shelter is provided in the little plantations laid out by the "Small Plantation Societies," which began work in 1887, and have since that time received substantial annual grants from the State. The Heath Society's officials see that this money is properly applied, and they also travel about the country giving help and advice with regard to the management of small plantations and woods. The State subvention for this purpose in 1907 was 80,000 Kr., and the Society distributed at half price over fifteen million young trees, viz., 3,240,686 broad-leaved trees and 12,495,307 conifers, including over 6,000 trees to school gardens.

Soon after commencing its labours, the Heath Society found that, if the moors of Jutland were to be made really fertile, a large quantity of marl and lime would have to be spread upon them. The Society, therefore, undertook to find beds of marl and distribute the marl to farms where the soil required it. Some 1,400 marl beds have been discovered up to the present. In some places the marl is plentiful and close to the fields, but in others it has to be carried for long distances, and in order to meet this difficulty, the Heath Society has laid down light railways in various places. A transportable railway, bought in 1905, is also a great boon, as it can be lent to the farmers of a district and removed to a fresh centre as soon as their wants are supplied.

The amount of marl distributed in 1906-07 was 83,855,000 lbs., and of lime, 12,977,000 lbs., and the total amount of marl already spread on the heaths of Jutland is about 100,000,000 lbs., or approximately 50,000 tons.

The work of distributing marl and lime grew so much that in 1897 it was decided to make a State grant for the purpose. This grant is administered by the Heath Society, which is thus enabled to sell marl and lime at a very cheap rate. Marl societies, which have private lines of railway in connection with stations, receive a grant of eight-tenths of the freight, but the consignee must pay in freight at least 3 Kr. per 20,000 lbs. of marl. Other consumers receive seven-tenths of the freight, with a like condition as to the share paid by the consignee. In 1906 some 4,000 wagon loads of marl were carried on these terms, and the State grant towards freight was 47,652 Kr.

Besides its activity in the distribution of marl, the Heath Society has carried out important drainage and irrigation works, particularly in Jutland. Over 100 canals, many miles in length, have been laid down for the purpose of distributing the supply of river water, and a number of wind motors have been erected in connection with the work of drainage. A scheme for the drainage and irrigation of a large district in Iceland is also on foot.

Drainage and Irrigation. The reclamation and cultivation of bogs have been an important branch of the Society's work since 1888. There are now three permanent experiment stations where bog-land farming experiments on a large scale are carried on. The Society has also 500 demonstration plots on land belonging chiefly to small farmers, where the owners carry on various experiments in bog culture. This system has been found to be a very valuable means of promoting the better cultivation of boggy land.

The above facts suggest the question: "Can similar results be obtained in Ireland?" The answer to this question depends upon the concurrence of three factors:—1st. The possession of administrative powers; 2nd. The existence of land suitable and *available* for planting; and, 3rd. The active co-operation of the individual land owner or occupier.

As far as administrative powers are concerned, a fairly close analogy exists between the Danish Heath Society and the County Committees of Agriculture. These Committees, with the aid of their various sub-committees and experts, can assist tree-planting in many ways, such as instruction in, and demonstration of, correct methods of planting, wholesale purchase and retail distribution of trees at cost price, and general advice upon all matters likely to concern the planter on a small scale.

The existence of suitable and available land for planting on a small scale in Ireland varies in different counties. In the West of Ireland a great deal of land in many districts is of so poor a nature that small corners which would grow trees are needed for the grazing of cattle or for cultivation. In such districts tree-planting can be carried out on a limited scale only, and it is scarcely likely that the occupier of such land could, without assistance, carry out work which requires the sinking of capital for a number of years. That, given such assistance, an enormous improvement in the landscape might be effected, and shelter provided, on an adequate scale, by the use of

such hardy trees as white American spruce or mountain pine, is quite evident from what has been done in Jutland under conditions of a very similar nature.

As regards three-fourths of Ireland, however, the existence of small patches of suitable land for planting, which, at present, are lying more or less waste, is well known to everyone. All that is required to prepare them for planting, in many cases, is a little fencing of a substantial nature, for, unless securely fenced, it is waste of time and money to plant trees. One difficulty which the planter in Ireland has to face is the rabbit plague, a difficulty which does not arise in Jutland. This difficulty may be met by the use of trees of a suitable size and species, or by the more expensive method of netting, but rabbits are, in any case, a cause of many failures and disappointments in small plantations, and, where they are numerous, do much to discourage tree-planting. Goats are often a frequent source of trouble to owners of small plantations, and greater restrictions must be placed upon the free-and-easy method of allowing those animals to range at will over the country before much tree-planting can be done in many districts.

The co-operation of the individual owner or occupier in the work of planting is, however, the fundamental base of the whole movement. In Denmark this has been fostered by patriotism and the national habit of turning everything to account, while the artistic education of the occupier of small holdings has had much to do with the sentiment that a home is something more than a shelter from wet and cold, or a fixed place of abode, and should, therefore, be made as attractive as possible from an all-round point of view. That such a sentiment does exist in Ireland is evident in many quarters, but it has not yet found practical application to the extent that is necessary to embrace tree planting as a means of imparting beauty to a landscape—as great a national asset as the fertility of the soil or the number of agricultural live stock, although it cannot be expressed in figures.

That the work of the Danish Heath Society in Jutland can be repeated in other countries cannot be regarded as an idea impossible of realisation, but time must elapse before the small occupying owner in Ireland can be educated up to the standard attained by his Danish counterpart.

THE KEEPING OF EGG RECORDS.*

A question which deserves much more attention than it has hitherto received in Ireland is that of keeping egg records. The great value of the egg and poultry industry to the country has been more fully realised within recent years, especially since the figures of Ireland's exports have been collected. From these figures it was seen that the export of eggs now reaches an estimated value of over £2,900,000, and the trade has been rapidly increasing, as the following figures show:—The value of eggs exported in 1905 was £2,555,080; in 1906, £2,760,176; and in 1907, £2,920,539. In fact Ireland holds the first position in the open market of Great Britain, the annual value of Irish eggs exceeding that of the eggs exported from any foreign or colonial country to the United Kingdom. Further, as Ireland imports only a very small and apparently not an increasing quantity of eggs, the Irish market is also supplied by the home article, and this supply, therefore, has to be added to the export of eggs in estimating the annual value of the egg industry to the country.

A moderate estimate would place the value of eggs annually produced in Ireland at approximately £4,000,000, and if we add the value of the birds killed for table use, the total value of the Irish egg and poultry industry cannot be less than £5,000,000 per annum. But while thus the production amounts to a very large annual sum, this could be greatly increased (1), by an increase in the number of poultry; (2) by improving the egg-laying strains in the country, and by using breeding stock only of such improved strains; (3) by getting rid of old and unproductive birds; and (4) by greater attention to proper feeding and housing. It is, however, chiefly with the second of these questions that we are here concerned. The improvement in the egg-laying strains is to be got (a) by careful selection of good laying strains, and (b) by weeding out unprofitable birds. In both sides of this work the keeping of systematic records is invaluable.

As regards present-day production, the annual average number of eggs produced per hen in Ireland is a matter of rough estimate. Some estimates would place it as low as 80, others as high as 100, or even more. What brings down the average is the number of old hens, broody hens, ill-fed and ill-bred hens, and of hens which,

**Value of
Annual Irish
Egg and
Poultry In-
dustry.**

**Average Egg
Production per
Hen.**

* See also *Journal*, Vol. VIII., No. 4, p. 710.

though well-bred, are not of good laying strains. It must also be considered that in certain districts in Ireland poultry is bred chiefly for table purposes. These and other causes all lower the present average. But it is not too much to expect that, with the increase in the number of birds of good laying strains, and with care given to weeding out the old and unproductive hens and to proper feeding and housing of the flocks, the average of the country can be raised to 130 and even 150 eggs per hen. This would mean an increase of at least £1,500,000 sterling of an annual return, not allowing for any increase in the number of stock, or for the increased value of the same number of stock; and when, in addition to this, there is considered the development of winter egg production and the resulting increase in value, it is clear how great room there is for improvement in the egg production of Ireland. In advancing all this work a good system of egg records will be of great assistance and interest.

Now, as regards the question of records, there are different degrees of perfection, and the possibilities of record keeping depend on the system on which the fowls are kept. **Possibilities of Record Keeping.** If all the fowls are in one miscellaneous flock, then the possibilities of the record keeping is strictly limited, and its information general; if the fowl are kept separate, according to breed, an advance is made in getting definite information; if, further, the pullets are separated from the hens, still more direct information of practical value is got, especially where the flocks are small; and, lastly, if the trap-nest system is adopted, there is the possibility of a thoroughly exact and scientific record, which enables the egg-laying capacity of each bird to be determined, and a series of exact observations to be made on the birds of any breed. If such a record is continued for the life-time of the bird, it becomes possible to judge capacity not by one year's record, but, as it should be, by the two, or in some cases more, years for which the bird may be kept. The most thoroughgoing and reliable system is that of trap-nesting; and as it is of cardinal importance not only to weed out unprofitable birds but also to raise the new stock from the best-laying strains—constitution being also considered—the trap-nest system is for these purposes invaluable.

The small flock enables much to be fairly satisfactorily determined. **Trap Nest System.** but the trap-nest system is certain. Unquestionably, it involves considerable additional attention and labour, both in minding the flocks and keeping the records, but it is just from such labour that valuable results are obtained and first-class stocks are built up, the market value of

which increases every year. A few bad-laying hens lower considerably the profits from a flock, and the continuance of a poor strain is an even more serious consideration. What, moreover, has to be looked to is not simply the present trouble and the present year. It is the gain in real experience by the trap-nest system over a series of years when the poultry-keeper has the records of five and six years to go back on. And it is not simply the question of immediate profit, it is also the interest in the matter, an interest which, however, will in most cases show where profits also are to be realised. Therefore, every serious poultry-keeper should consider the possibility of trap-nesting his birds, or at least a flock of them.

The returns, which are summarised in the appended tables,* are a modest beginning in what it is hoped will develop into a wide and continuous series of egg-laying records of the several chief poultry breeds in Ireland and also of cross-bred flocks. It has been possible to start this record through the co-operation of the poultry instructors, the egg-station keepers, and a number of farmers and others who are interested in poultry-keeping. The number of records, especially in the case of certain breeds, is small, and the returns are not put forward as representative. But it has been considered advisable to publish the returns as they are, seeing that they would be of no small interest to poultry-keepers, and would induce attention and thought to the question of poultry records and the evidence they can furnish as to the capacity of different breeds. For convenience, also, a summary table of the present results has been drawn up, though it is desirable that, in considering such a summary, careful reference to the details in the particular tables be made, as it will frequently be found that the average has been considerably influenced by one or two exceptionally low, or in certain cases exceptionally high, returns. It should also be pointed out that it has not been possible to distinguish pullet records from hen records, as in general the flocks are mixed. In this and in other directions it is hoped that considerably greater precision will be found possible in future returns.

Reference may be made to one other aspect of egg records, of which no account is here taken.† It is not sufficient to know the egg production of any flock—it is also necessary to know the cost of food and keep. It is very much to be desired that poultry-keepers should preserve a careful record of the cost of food and the expenditure incurred on their flocks, as such records are of

* See pages 440 *et seq.*

† See, however, Appendix Table.

great practical suggestiveness to the poultry-keepers themselves, and of interest for purposes of comparison with other records, both in this and in other countries. It is hoped that such records may be obtained from a number of poultry-keepers, and that it will be possible to develop also in a practical way in Ireland this important side of poultry statistics.

It should be pointed out also that the present returns are not in any sense comparable with egg-laying competition records. The flocks, as a whole, are above the present average of the country, both as regards the breed and of the birds and in their general management. But they are not above what *should* be the average of the country, and they include a considerable number of ordinary farm flocks. The object of such returns is, in short, to furnish data as to the egg-laying capacity of different breeds under good average food and management.

The tables here published are for the year 1908.

In all, the appended tables give particulars of 125 flocks, and the general average for all these flocks is 120 eggs per hen per annum. Looking somewhat more closely into the returns it is seen that one flock of birds gave an average result of over 200 eggs per bird per year. Five flocks gave a result of over 180 eggs per year. Ten flocks gave 160 eggs or over. Twenty-four flocks gave 140 eggs or over. Twenty-seven flocks gave 120 eggs or over. Thus sixty-seven flocks gave the average or over the average number of eggs. Again, twenty-four flocks gave 100 eggs or over. Twenty-four flocks gave 80 eggs or over, and ten flocks gave under 80 eggs per bird per year. Thus fifty-eight flocks gave less than the average.

Making a further analysis it will be noticed that while White Leghorns gave a general average of 134.6 eggs per annum, the flock of birds of this breed which gave the best results showed an average of 171.6, and the flock—about equal in number—which showed the lowest results in the same breed gave an average of 69.8. In a similar way Plymouth Rocks, which showed a general average of 109 eggs, varied from a highest of 201.1 eggs to a lowest of 69.8. Similarly White Wyandottes, with a general average of 129.2, had a highest result of 171.9 and a lowest of 88.0. Buff Orpingtons, with a general average of 132.8, had a highest result of 188.6 and a lowest result of 86.7. Black Minorcas, having a general average of 122.1, showed a highest average of 189.0 and a lowest average of 81.2.

Faverolles had a general average of 122.6, a highest average of 165.5, and a lowest of 68.0. The Mixed Flocks, with a general average of 117.1, had a highest result of 196.3 and a lowest of 71.3. These results may be seen in more detail in the accompanying table.

TABLE A.

Breed.	Average of all the flocks.	Average of best flock.	Average of worst flock.
White Leghorns	134.6	171.6	69.8
Brown Leghorns	143.6	181.8	113.8
Black Minorcas	122.1	189.0	81.2
Buff Orpingtons	132.8	188.6	86.7
White Orpingtons	122.2	126.5	122.8
White Wyandottes	129.2	171.9	88.0
Faverolles	122.6	165.4	68.0
Barred Plymouth Rocks	109.0	201.1	69.8
Houdans	99.2	134.4	82.7
Light Sussex	97.0	102.3	89.0
Mixed Pure Breeds	135.7	184.8	117.9
Mixed Flocks.. .. .	117.1	196.3	71.3

While it is not claimed that these facts, or the tables generally, show conclusive results—indeed the limitations of these returns have been already referred to—it may be worth while to point out a few lessons of the returns. The returns emphasize two facts:—
 (1) the great importance of paying close attention to strain, and (2) the use and need of egg records.

That it is not so much a question of breed as a question of strain is tolerably clear brought out by the returns, for we see some flocks of general purpose fowl and some mixed flocks giving better results than many flocks of fowl of the more special laying breeds. In fact it is pretty evident that breed is very distinctly subsidiary to strain in the matter of egg production. It is not intended to claim that the difference in these figures is wholly due to strain, although the fact that such great variations occurred in all the breeds shows that strain is the predominant cause of difference. It must be granted that in many cases not a little of the difference in results may be due to other causes, as, for instance, the ages of birds, method of housing, food supply, the climate of the district, and general treatment of the flocks and birds. Still these figures bring out very prominently the importance of strain.

Some Lessons of the Returns.

The Importance of Strain.

The second lesson taught by the tables is the great value of egg-laying records. For it will undoubtedly provoke much thought when it is realised that a poultry-keeper keeping, say, White Leghorns, may obtain an average yield of 171 eggs per bird per year, with a flock of thirty birds, while another poultry-keeper, with a very similar sized flock of birds, may get as poor a result as 70 eggs. These figures and the others like them which occur frequently through the returns will at once give a poultry-keeper, whose birds are giving results below the average, much reason to look carefully into his choice of birds and his methods of keeping them. An average of 120 eggs per annum—the general average shown for all birds in these returns—may be satisfactory up to a point, and it is undoubtedly above the general average of the country, but when results as high as those obtained by some of the more successful poultry-keepers can be attained there is very considerable scope for improvement by the poultry-keeper whose results are up to the average. Again, those keepers of birds that have fallen very much below the average will see what a great leeway they have to make up, and they will realise the fact that they will need to improve either their birds or their methods, or perhaps both.

The Value of Egg Records.

With regard to the breeds that have given the best results, it may be advisable to point out here one of the limitations of the returns. In the case of some of the breeds of fowl, notably Brown Leghorns, Houdans, Light Sussex, and White Orpingtons, the number of hens to which the return relates are fewer than is desirable for the securing of representative results. Too much importance should not be paid, therefore, to the results in the cases of these breeds. Possibly the figures for Brown Leghorns are somewhat high, and those for Houdans and Light Sussex somewhat too low. The breeds that have done notably well are White Leghorns, with an average of 134.6 eggs per bird per year; Buff Orpingtons, with an average of 132.8, and White Wyandottes, with an average of 129.2.

The Comparative Results.

As regards the periods of greatest egg production it will be noticed that, on the whole, the laying breeds—White Leghorns, Brown Leghorns, and Minorcas, show a higher average during the second and third quarters of the year, while the general purpose breeds

Greatest Production and Greatest Price.

held their own in the first quarter and gave the best result in the last quarter. This fact should be taken into account when comparing the value of the total annual yield. It is not the hen showing the highest annual yield that is always the most profitable, as much depends upon the period of the year when the eggs are produced. A moderate annual yield, with a higher rate of production when prices are high, may be more profitable than a larger yield if the greater yield is obtained at a time when prices are less remunerative. In order to make the variations in the laying of the different breeds more apparent, quarterly averages have been prepared, and a summary table showing them is included in the tables at the end of this article.

The full importance of the time of greatest egg production will be realised when it is remembered that the price of eggs varied in 1908, as shown in the following statement:—

Average price per 120, March Quarter,	. 8 7½,
" " " " June "	. 6 10½,
" " " " September, "	. 8 6,
" " " " December, "	. 11 8½.

From this it will be seen that ten eggs in the December quarter are approximately as valuable as seventeen eggs in the June quarter.

Another point of some importance with regard to the keeping of egg records has not been taken into account in keeping these returns, as sufficient data on the subject has not as yet been obtained. The mere number of eggs laid by a hen is not alone enough to enable us to judge of the value of the bird. It is necessary also to have some account of the size and weight of eggs laid. A dealer cannot be expected to give as much for eggs weighing say 15 lbs. per 120 as he would give for eggs weighing say 18 lbs. per 120. Eggs should average not less than 2 ozs. each, and when a hen lays eggs under this weight, the laying value of the bird is considerably lessened. Little data on the subject has been obtained as yet, but a return forwarded by a careful correspondent is appended.

TABLE B.

Statement of Weights of Lots of six eggs each, taken from pens of various breeds of hens.

Breed.	Hens or Pullets.	Weight in ounces.
White Leghorns (English type), .	Hens	14½
Brown Leghorns,	Hens	13½
Minorcas,	Hens	14½
Buff Orpingtons,	Hens	15
White Wyandottes,	Hens	14½
Faverolles,	Hens	13½
Light Sussex,	Hens	13½
Speckled Sussex	Hens	13
White Leghorns (American), .	Pullets	13
Faverolles,	Pullets	12½
Plymouth Rocks,	Pullets	13
Red Sussex,	Pullets	12½

An interesting record sent in by a correspondent is printed at the end of the tables. This record shows not

**A Pattern
Record.**

only the number of eggs yielded by the hen, but also the cost of keeping the birds, the money received for the eggs, and the total profit.

As will be seen from the attached tables, a considerable number of egg records are already being kept in Ireland. But it is very desirable that the number should be greatly increased.

The Department, therefore, desire to know of farmers and other poultry keepers who are willing to keep careful records of their egg yields. An egg record book in which such returns can be kept will be sent to all applicants. Applications should be addressed to the Secretary, Department of Agriculture and Technical Instruction, Upper Merrion Street, Dublin.

EGG RECORD, 1908.

SUMMARY TABLE.

Name of Breed.	January.		February.		March.		April.		May.		June.	
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.
1 White Leghorns	327	5.9	327	11.1	326	16.8	326	20.6	324	20.6	325	17.4
2 Brown Leghorns	119	7.9	119	15.1	126	17.7	125	18.9	124	18.0	107	16.4
3 Black Minorcas	256	5.0	256	9.9	255	15.0	252	18.5	250	20.0	249	13.0
4 Buff Orpingtons	270	9.7	268	12.3	264	15.0	241	16.9	232	16.1	241	13.4
5 White Orpingtons	60	8.6	55	13.4	48	18.9	52	16.6	44	14.2	32	8.6
6 White Wyandottes	221	7.4	210	10.1	210	17.0	210	18.0	205	17.9	205	13.2
7 Faverolles	239	7.0	238	11.0	238	15.8	231	17.2	229	18.0	225	13.8
8 Barred Plymouth Rocks	305	7.0	305	10.9	303	13.8	303	15.8	299	15.8	291	10.5
9 Houdans	41	1.5	42	5.2	41	9.7	42	15.4	40	17.2	38	12.5
10 Light Sussex	57	3.8	57	8.1	55	8.9	50	9.6	42	10.8	27	12.8
11 Mixed Pure Breeds ..	269	7.6	276	11.3	259	15.0	257	18.6	251	17.0	245	14.7
12 Mixed Flocks,	3458	5.4	3400	9.4	3319	14.4	3218	15.8	3101	16.0	2988	12.8
Totals	5622	6.0	5553	10.1	5444	14.9	5307	16.6	5141	16.7	4973	13.2

SUMMARY TABLE

		March Qr.		June Qr.	
Laying Breeds ..	(White Leghorn .. ..	..	33.8	..	58.6
	(Brown Leghorn .. ..	..	40.7	..	53.3
	(Minorca .. ..	..	29.9	..	51.5
General Purpose Breeds	(Buff Orpingtons .. ..	..	37.0	..	46.4
	(White Orpingtons .. ..	..	40.9	..	39.4
	(White Wyandottes .. ..	..	34.5	..	49.1
	(Faverolles .. ..	..	33.8	..	49.0
	(Barred Plymouth Rocks ..	..	31.7	..	42.1
	(Houdans .. ..	..	16.4	..	45.1
Table Breed ..	Light Sussex .. ..	..	20.8	..	33.2
	Mixed Pure Breeds .. ..	..	33.9	..	50.3
	Mixed Flocks .. ..	..	29.2	..	44.6

EGG RECORD, 1908.

SUMMARY TABLE.

July.		August.		September.		October.		November		December.		Name of Breed.	
Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.		Total of Monthly Averages.
313	14.3	305	10.3	297	5.5	369	3.5	330	4.3	334	4.3	134.6	1 White Leghorns.
106	15.5	93	14.5	91	9.9	129	3.5	129	2.7	143	3.5	143.6	2 Brown Leghorns.
243	14.2	238	10.8	232	6.0	245	3.6	241	2.7	267	3.4	122.1	3 Black Minorcas.
259	12.8	228	11.6	222	8.8	231	5.0	254	4.1	276	7.1	132.8	4 Buff Orpingtons.
50	8.0	50	8.4	45	9.0	45	7.0	46	3.5	60	5.7	121.9	5 White Orpingtons.
199	12.4	188	9.4	188	7.3	216	4.3	232	4.8	236	7.4	129.2	6 White Wyandottes.
253	9.4	245	10.3	245	9.2	247	3.9	235	3.0	229	4.0	122.6	7 Faverolles.
292	9.4	285	7.5	279	7.0	327	4.0	347	3.5	361	3.8	109.0	8 Barred Plym'th Rocks
38	8.7	33	5.4	33	7.7	31	4.0	30	5.9	33	6.0	99.2	9 Houdans
27	10.0	25	11.0	25	11.7	25	5.1	24	1.9	26	3.3	97.0	10 Light Sussex.
236	13.5	227	11.5	213	8.0	237	7.0	227	4.4	244	7.1	135.7	11 Mixed Pure Breeds.
2828	12.6	2718	10.9	2678	8.3	3204	4.3	3040	3.4	3246	3.8	117.1	12 Mixed Flocks.
4844	11.8	4635	10.6	4548	8.0	5306	4.3	5135	3.5	5455	4.3	120.0	Totals.

SHOWING QUARTERLY AVERAGES.

September Qr.				December Qr.				Total.
..	..	30.1	..	..	..	12.1	..	134.6
..	..	39.9	..	..	..	9.7	..	143.6
..	..	31.0	..	..	..	9.7	..	122.1
..	..	32.2	..	..	..	16.2	..	132.8
..	..	25.4	..	..	..	16.2	..	121.9
..	..	29.1	..	..	..	16.5	..	129.2
..	..	28.9	..	..	..	10.9	..	122.6
..	..	23.9	..	..	..	11.3	..	109.0
..	..	21.8	..	..	..	15.9	..	99.2
..	..	32.7	..	..	..	10.3	..	97.0
..	..	33.0	..	..	..	18.5	..	135.7
..	..	31.8	..	..	..	11.6	..	117.1

EGG RECORD, 1908.

WHITE LEGHORNS.

No.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total of Monthly Averages.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1	20	3.6	30	13.5	30	15.4	30	16.2	30	15.4	30	12.1	30	6.0	30	6.6	30	6.3	30	1.6	25	1.2	28	2.5	98.3
2	40	7.4	40	14.3	40	22.1	40	22.6	40	22.1	40	21.6	37	11.3	35	9.0	35	9.9	55	4.6	35	2.1	35	5.2	151.1
3	30	5.9	30	11.2	30	23.4	30	22.6	30	23.4	30	21.7	30	12.2	30	8.2	30	7.9	55	3.8	55	1.3	55	1.3	137.9
4	36	7.5	36	11.1	36	24.1	36	20.3	36	24.1	40	18.6	40	17.3	36	17.7	30	11.6	30	4.5	30	3.2	35	5.0	157.7
5	30	7.2	30	16.8	29	22.7	29	23.9	27	22.7	26	21.5	22	19.4	22	14.6	22	5.5	36	5.7	24	12.3	30	4.0	171.6
6	36	2.2	36	8.7	36	21.3	36	20.1	36	21.3	34	18.2	34	17.2	32	8.2	30	2.0	30	0.1	30	0.3	30	1.6	116.5
7	36	2.0	36	6.6	36	15.5	36	15.8	36	15.5	36	3.9	34	6.5	34	1.6	34	1.1	36	0.1	36	0.8	36	3.0	69.8
8	30	5.9	30	11.0	30	18.8	30	18.8	30	18.8	30	22.0	27	20.2	27	12.6	27	1.6	38	7.7	36	20.4	36	15.8	170.9
9	32	6.0	32	3.5	32	22.4	32	22.9	32	22.4	32	18.2	32	17.6	32	16.2	32	3.2	32	1.2	32	0.2	32	0.5	125.0
10	20	5.8	20	14.7	20	22.3	20	22.9	20	22.3	20	15.4	20	16.5	20	10.3	20	8.7	20	6.5	20	3.7	10	9.8	154.4
11	7	7.4	7	8.6	7	13.0	7	17.7	7	13.0	7	7.1	7	13.7	7	4.7	7	0.2	7	0.0	7	1.7	7	2.0	83.1
Total.	327	5.9	327	11.1	326	20.6	324	20.6	324	20.6	325	17.4	313	14.3	305	10.3	297	5.5	369	3.5	330	4.3	334	4.3	134.6

BROWN LEGHORNS.

No.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total of Monthly Averages.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1	30	13.0	30	18.0	30	20.4	30	20.7	30	21.6	30	20.6	30	19.1	28	18.6	25	13.3	42	5.0	42	5.2	41	6.3	181.8
2	20	5.8	20	12.8	20	16.7	20	19.6	19	20.9	17	19.3	16	16.8	16	9.4	16	4.2	21	0.0	21	0.7	21	2.9	129.1
3	23	6.6	23	16.6	23	15.7	23	18.0	23	13.4	24	12.5	24	12.8	23	17.0	23	15.0	30	7.0	30	1.4	30	3.3	139.3
4	40	6.3	40	12.6	40	17.7	40	17.9	40	17.5	30	13.0	30	12.3	20	10.1	20	4.2	30	0.0	30	1.0	45	1.2	113.8
5	6	4.1	6	19.5	6	22.0	6	24.3	6	20.1	6	19.0	6	22.1	6	11.2	6	7.0	6	6.2	6	7.0	6	5.3	167.8
Total.	119	7.9	119	15.1	126	17.7	125	18.9	124	18.0	107	16.4	106	15.5	93	14.5	91	9.9	129	3.5	129	2.7	143	3.5	143.6

BLACK MINORCAS.

No.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total of Monthly Averages.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1	30	17.4	30	20.2	30	26.6	30	27.4	30	28.7	30	26.5	30	21.0	30	12.4	30	3.1	45	2.8	30	2.9	30	0.0	189.0
2	30	5.2	30	11.3	30	17.2	30	14.0	30	22.6	30	6.1	26	16.7	26	16.1	26	13.9	30	9.6	30	3.6	30	4.2	140.5
3	30	1.8	30	6.6	30	12.5	28	17.3	28	18.0	28	7.8	28	10.0	28	5.0	28	1.4	28	0.8	28	0.0	28	0.0	81.2
4	30	5.0	30	8.8	30	10.9	30	17.3	30	18.3	30	13.1	30	10.2	28	8.6	24	6.1	34	1.3	34	2.3	35	3.7	105.6
5	40	1.2	40	4.9	40	11.5	39	13.4	37	15.3	36	8.6	34	9.0	34	7.5	34	5.0	30	2.8	31	4.5	53	5.8	89.5
6	30	2.5	30	10.0	29	14.8	29	20.8	29	21.3	29	18.6	29	18.2	29	11.4	29	4.8	22	2.0	22	1.6	22	0.6	128.6
7	30	0.8	30	5.0	30	8.2	30	16.2	30	20.2	30	10.5	30	11.2	27	12.0	25	2.6	20	0.0	30	1.5	33	4.2	92.4
8	30	4.9	30	9.8	30	20.1	30	20.1	30	17.0	30	12.9	30	16.2	30	13.6	30	10.7	30	9.0	30	4.4	30	5.6	144.3
9	6	13.5	6	10.0	6	14.0	6	21.0	6	20.0	6	18.7	6	18.5	6	14.3	6	4.2	6	0.0	6	2.7	6	4.7	141.6
Total,	256	5.0	256	9.9	255	15.0	252	18.5	250	20.0	249	13.0	243	14.2	238	10.8	232	6.0	245	3.6	241	2.7	267	3.4	122.1

BUFF ORPINGTONS.

1	22	8.5	22	10.0	22	13.0	22	14.0	22	15.2	22	14.8	15	13.7	15	16.7	15	14.2	15	13.1	25	6.0	25	8.0	147.2
2	30	1.7	30	6.6	30	9.7	26	13.5	22	10.9	20	8.3	30	10.0	24	9.1	24	8.7	24	4.3	40	1.0	55	2.9	86.7
3	36	16.6	36	20.2	36	18.5	27	23.0	30	20.8	32	14.7	26	12.5	26	12.4	30	8.4	31	4.2	27	5.3	27	10.9	167.5
4	36	10.1	36	10.7	36	15.5	33	19.3	33	20.6	33	16.4	36	10.6	37	9.3	36	8.7	36	4.5	36	5.1	36	13.1	143.9
5	30	11.3	30	14.0	30	16.7	28	12.0	27	12.3	27	11.8	25	11.2	22	11.6	16	9.1	31	2.1	31	1.9	30	7.5	121.5
6	30	5.6	30	5.9	30	10.5	30	11.7	30	10.9	30	10.8	30	11.0	30	9.9	30	3.7	30	1.8	30	3.0	30	3.7	88.5
7	35	12.7	35	14.3	35	16.4	30	23.1	27	17.6	32	8.3	31	13.1	30	10.3	30	7.0	20	1.8	30	2.2	35	6.9	133.7
8	40	8.3	40	16.6	40	19.7	40	21.1	38	22.5	38	20.9	37	19.9	37	17.1	36	14.6	36	10.5	27	9.8	27	7.6	186.6
9	11	14.5	9	13.0	5	14.6	5	12.0	3	17.0	7	21.7	5	14.0	7	14.8	5	17.0	8	2.7	8	3.0	11	6.0	150.3
Total,	270	9.7	268	12.3	264	15.0	241	16.9	232	16.1	241	13.4	259	12.8	228	11.6	222	8.8	231	5.0	254	4.1	276	7.1	132.8

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WHITE ORPINGTONS.

No.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total of Monthly Averages.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1	30	5.8	25	13.3	18	26.2	22	18.8	14	18.7	12	6.1	30	6.0	30	7.3	30	9.1	30	8.0	31	2.8	30	4.4	126.5
2	30	11.4	30	13.5	30	14.6	30	15.0	30	12.0	20	10.0	20	11.0	20	10.0	15	8.5	15	4.8	15	5.0	30	7.0	122.8
Total,	60	8.6	55	13.4	48	18.9	52	16.6	44	14.2	32	8.0	50	8.0	50	8.4	45	9.0	45	7.0	46	3.5	60	5.7	121.9

WHITE WYANDOTTES.

No.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total of Monthly Averages.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1	27	9.4	26	14.5	26	15.1	25	17.2	24	18.8	24	10.7	20	14.3	20	7.8	16	7.0	24	10.5	24	4.6	25	7.6	137.5
2	30	2.4	30	4.4	30	10.5	30	15.3	30	14.7	30	13.3	30	9.7	30	9.7	30	5.8	24	2.2	24	0.0	45	0.0	98.0
3	45	8.4	45	9.2	45	16.2	44	14.0	40	14.4	40	8.6	40	6.8	30	4.1	29	2.0	28	0.7	40	3.0	40	5.0	92.4
4	21	13.1	21	17.5	21	20.9	21	21.9	21	20.2	21	14.4	21	9.6	21	5.2	21	1.4	21	0.7	21	6.2	21	5.0	136.1
5	50	7.7	40	15.8	40	20.4	40	19.5	40	22.0	40	14.3	40	17.4	40	14.2	40	11.1	50	4.2	50	9.3	50	16.2	171.9
6	30	4.3	30	8.5	30	17.9	30	20.2	30	17.8	30	16.8	30	11.6	30	10.8	30	11.4	30	4.7	30	4.3	30	7.2	140.8
7	18	6.5	18	10.5	18	18.4	20	19.8	20	18.9	20	14.7	18	15.5	18	12.8	18	11.5	18	10.7	22	6.0	25	10.8	156.1
Total,	221	7.4	210	10.1	210	17.0	210	18.0	205	17.9	205	13.2	199	12.4	188	9.4	188	7.3	216	4.3	232	4.8	236	7.4	139.2

FAVEROLLES.

	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total of Monthly Averages.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1	30	3.3	30	8.5	30	10.6	30	16.1	30	16.2	20	10.1	16	3.8	16	6.0	16	3.0	30	3.0	30	3.2	30	3.3	87.1
2	40	10.8	40	11.6	40	15.7	40	21.3	40	26.3	40	20.5	40	14.2	40	12.2	40	10.2	30	6.1	30	6.8	20	9.7	165.4
3	11	14.0	10	15.8	10	17.8	10	19.6	10	19.6	10	10.8	8	18.0	8	13.5	8	11.6	10	0.0	10	1.4	10	10.3	157.2
4	22	8.9	22	16.0	22	24.1	22	18.4	22	16.0	22	10.4	22	9.4	22	10.1	22	7.9	22	9.0	22	6.1	22	6.0	142.3
5	35	6.4	35	9.2	35	18.7	35	16.8	35	16.4	35	12.8	30	10.3	30	9.9	30	9.4	35	1.6	35	0.0	35	2.3	113.8
6	25	0.1	25	7.4	25	19.0	25	17.0	25	14.5	25	6.4	23	1.5	20	1.6	20	0.5	20	0.0	20	0.0	25	0.0	68.0
7	29	11.3	29	14.5	29	14.7	29	15.7	29	16.9	29	16.7	38	10.2	33	11.6	33	11.7	30	3.3	30	3.0	20	10.1	139.7
8	40	4.8	40	7.4	40	12.9	34	17.4	32	17.3	40	12.2	40	10.7	40	8.6	40	14.0	44	4.6	32	2.2	31	2.0	114.1
9	7	9.0	7	11.0	7	13.1	6	20.0	6	17.0	6	17.3	6	18.0	6	11.2	6	11.3	6	5.8	6	0.0	6	0.0	133.7
10	30	2.6	30	8.8	30	12.6	30	12.3	30	10.3	30	8.0	30	4.6	30	6.9	30	6.9	30	6.3	30	5.4	30	1.2	86.9
Total.	239	7.0	238	11.0	238	15.8	231	17.2	229	18.0	225	13.8	253	9.4	245	10.3	245	9.2	247	3.9	235	3.0	229	4.0	122.6

BARRED PLYMOUTH ROCKS.

	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total of Monthly Averages.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1	30	4.3	30	7.3	30	12.5	30	18.4	30	15.2	30	9.2	30	6.6	30	2.3	30	2.1	30	1.4	33	2.4	35	3.0	84.7
2	30	6.8	30	13.4	30	17.9	30	17.0	30	17.0	25	8.6	30	4.0	25	6.2	25	7.0	30	8.3	30	1.0	30	3.0	110.0
3	22	5.9	22	15.9	22	16.4	22	10.4	22	8.1	20	2.7	22	1.7	22	2.7	22	1.7	30	1.0	30	3.2	30	5.3	75.0
4	22	13.9	22	16.0	22	17.9	22	14.7	20	14.6	19	13.4	18	14.5	18	14.3	18	15.0	18	5.3	18	3.9	11	9.4	162.0
5	40	2.4	40	9.6	38	13.4	38	14.6	40	13.1	40	8.1	35	7.6	38	4.4	38	4.7	55	1.1	55	0.6	55	0.4	80.0
6	34	3.4	34	7.4	34	9.5	30	14.1	26	16.3	26	13.9	30	8.2	26	12.1	24	6.6	24	0.0	24	0.6	40	1.5	98.4
7	30	3.9	30	9.4	30	13.1	29	11.7	29	11.5	29	7.6	29	6.3	28	5.0	24	4.4	30	2.8	30	4.9	33	6.0	86.6
8	22	0.0	22	1.3	22	6.5	22	16.5	22	15.0	22	13.0	22	11.0	22	3.6	22	0.0	22	0.0	31	0.6	31	2.3	69.8
9	45	13.0	45	12.9	45	17.7	50	18.3	50	16.6	50	12.2	50	12.1	50	11.1	50	9.1	50	8.7	60	7.0	60	7.5	146.4
10	6	16.0	6	13.0	6	18.3	6	18.7	6	17.0	6	12.5	6	17.6	6	6.7	6	16.0	6	7.3	6	2.0	6	0.0	145.1
11	24	15.9	24	18.4	24	25.2	24	24.1	24	23.6	24	18.7	20	23.0	20	19.1	20	14.6	36	4.8	32	9.3	30	4.4	201.1
Total.	305	7.0	305	10.9	303	13.8	303	15.8	299	15.8	291	10.5	292	9.4	285	7.5	279	7.0	327	4.0	347	3.5	361	3.8	108.0

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HOUDANS.

No.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total of Monthly Averages.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1	12	4.3	13	9.5	13	14.0	13	19.8	13	24.8	12	21.9	12	15.4	9	11.0	9	3.6	9	2.8	8	2.1	8	5.2	134.4
2	29	0.3	29	3.3	28	7.7	29	13.5	27	13.5	26	8.3	26	5.6	24	3.4	24	9.2	22	4.4	22	7.3	25	6.2	82.7
Total,	41	1.5	42	5.2	41	9.7	42	15.4	40	17.2	38	12.5	38	8.7	33	5.4	33	7.7	31	4.0	30	5.9	33	6.0	99.2

LIGHT SUSSEX.

1	37	5.1	37	8.8	37	9.3	34	9.5	30	11.4	17	12.6	17	10.2	16	11.0	16	12.5	15	5.5	12	2.8	12	3.6	102.3
2	20	1.6	20	6.8	18	8.0	16	10.0	12	9.4	10	13.1	10	9.7	9	11.2	9	10.4	10	4.7	12	1.0	14	3.1	89.0
Total,	57	3.8	57	8.1	55	8.9	50	9.6	42	10.8	27	12.8	27	10.0	25	11.0	25	11.7	25	5.1	24	1.9	26	3.3	97.0

MIXED PURE BREEDS.

1	50	11.5	50	11.5	50	14.6	45	20.0	41	21.0	41	17.3	37	17.6	35	16.0	35	11.4	53	4.6	47	6.0	44	9.0	160.5
2	120	3.6	130	9.4	125	14.6	120	19.1	120	17.0	118	14.4	115	13.2	110	9.9	100	6.2	100	6.0	100	2.1	100	3.0	118.5
3	49	4.1	46	9.7	38	13.4	36	16.1	34	14.0	30	12.2	30	10.9	28	11.0	28	4.3	30	4.5	30	8.0	30	9.7	117.9
4	20	5.2	20	12.5	20	15.6	30	18.7	30	12.8	30	13.8	24	10.4	24	14.0	24	12.0	24	8.7	30	2.0	40	9.6	140.9
5	30	22.0	30	18.5	26	19.8	26	19.0	26	19.5	26	16.0	30	10.1	30	10.8	26	10.0	30	16.6	20	10.3	30	12.2	184.8
Total,	269	7.6	276	11.3	259	15.0	257	18.6	251	17.0	245	14.7	236	13.5	227	11.5	213	8.0	237	7.0	227	4.4	244	7.1	135.7

MIXED FLOCKS.

No.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total of Monthly Averages.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1	40	5.9	40	11.6	40	14.5	40	16.6	40	13.9	30	11.2	30	10.7	30	12.4	30	10.1	50	1.4	50	2.1	50	2.2	112.3
2	13	11.8	13	13.5	13	14.2	13	16.5	13	13.4	13	15.7	13	16.7	13	16.9	13	13.2	24	6.2	24	2.8	21	2.2	143.1
3	90	5.8	88	13.5	80	20.7	80	18.8	75	17.7	73	16.6	73	11.1	68	14.3	62	15.6	95	7.5	70	8.8	70	8.0	136.4
4	80	5.4	70	6.3	67	12.2	65	18.1	60	17.8	55	13.5	40	15.2	40	12.9	35	11.5	40	6.0	40	3.0	48	1.8	123.7
5	168	5.7	165	9.5	158	13.5	150	11.5	145	12.3	135	7.0	88	8.3	88	3.5	88	3.1	140	1.5	137	1.4	139	2.3	79.6
6	56	8.2	48	12.5	42	15.1	35	17.8	35	16.8	30	15.0	30	10.0	29	9.5	29	5.6	35	0.0	5	1.4	8	11.6	124.5
7	60	4.8	59	6.8	56	13.8	57	15.1	58	12.6	58	6.7	60	5.8	60	8.5	60	4.7	60	2.9	66	1.6	69	1.4	84.7
8	45	3.3	45	5.5	40	15.0	40	18.9	40	17.7	40	7.3	30	10.2	30	12.2	30	5.3	28	2.0	27	0.1	30	1.2	99.2
9	40	8.8	40	10.5	40	14.5	40	17.4	40	16.6	40	12.7	40	9.7	40	8.8	40	3.7	55	2.1	55	2.0	55	0.8	107.6
10	24	12.5	24	16.3	24	20.0	24	18.1	24	18.0	23	17.5	22	17.8	22	15.4	22	12.4	22	4.3	22	2.1	24	2.8	157.2
11	44	12.5	44	13.7	44	15.4	45	14.1	45	10.0	45	6.5	45	9.1	45	6.4	45	2.5	49	6.4	45	8.0	51	7.0	111.6
12	50	2.6	50	6.0	50	14.6	45	19.9	45	16.9	40	13.9	40	15.3	40	13.7	40	7.2	53	2.5	35	1.3	35	2.7	116.6
13	72	0.8	72	5.4	72	18.4	60	19.7	60	23.4	60	20.5	40	25.5	40	18.2	40	7.3	90	2.5	29	2.6	90	4.5	148.8
14	55	2.9	55	8.8	55	14.4	60	11.9	58	12.1	55	9.7	50	8.9	40	7.8	40	4.8	40	5.1	55	3.1	55	2.3	91.8
15	72	8.4	72	12.1	72	16.4	78	16.4	78	14.6	78	13.0	73	13.3	73	11.4	73	7.8	106	3.1	86	2.0	86	2.6	120.7
16	100	4.0	100	10.4	100	13.7	90	15.5	90	17.5	88	14.9	80	15.3	76	12.6	76	10.3	115	4.0	108	1.2	111	2.1	121.9
17	60	13.0	60	9.3	60	21.8	60	21.0	60	20.4	60	12.0	60	10.1	60	6.3	60	8.0	60	5.0	60	2.0	60	4.6	135.5
18	108	4.1	106	9.4	106	13.4	100	16.1	80	18.0	80	13.8	100	11.4	100	10.5	80	8.7	80	6.7	80	2.7	80	4.6	119.4
19	80	10.2	78	16.0	76	17.3	76	19.2	70	20.7	63	20.8	62	17.1	60	14.5	57	16.0	82	5.3	82	4.6	86	5.0	166.6
20	77	4.0	77	7.9	76	9.1	77	9.0	65	9.8	40	10.6	40	7.5	40	6.1	40	6.0	60	5.4	60	3.4	60	3.1	81.9
21	100	4.6	100	9.0	80	15.4	80	16.2	76	16.3	76	9.0	90	14.9	90	13.3	90	10.3	130	5.3	130	5.3	130	5.6	125.2
22	80	1.4	75	5.8	75	8.9	70	19.1	65	18.7	65	14.5	60	14.7	45	13.6	45	13.4	45	10.8	44	6.2	43	4.9	132.0
23	70	6.7	65	11.4	60	20.0	60	19.2	60	16.2	60	12.8	60	15.4	60	12.3	60	7.2	60	7.1	60	4.1	60	3.2	136.6
24	45	3.0	45	7.4	45	14.7	45	15.3	45	13.4	42	11.8	40	12.8	40	12.5	40	10.3	40	5.0	40	1.2	79	2.0	108.4
25	60	6.6	60	9.1	50	10.2	40	8.6	40	7.4	40	4.2	40	4.1	40	5.8	40	4.7	40	6.0	40	4.0	60	3.8	73.5
26	60	5.6	60	9.2	60	13.4	60	14.5	50	15.4	50	17.8	60	13.6	60	10.0	45	7.4	60	2.1	65	1.6	65	2.2	113.8
27	28	5.3	28	7.2	24	16.7	24	17.9	20	11.0	22	15.0	24	10.7	20	9.8	20	8.0	26	5.0	26	3.8	26	3.1	113.5

EGG RECORD, 1908.

MIXED FLOCKS—continued.

No.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total of Monthly Averages.	
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.		
28	40	2.4	40	4.8	36	6.6	36	10.5	36	12.8	34	13.9	36	8.0	36	5.5	36	6.8	36	2.5	42	2.3	42	3.4	79.5	
29	38	3.5	38	11.3	37	22.2	37	23.4	37	21.8	37	18.7	35	13.1	35	11.1	35	8.8	51	5.2	50	5.3	50	10.7	155.1	
30	48	5.5	48	7.1	47	15.9	50	16.7	48	10.9	50	7.0	36	8.1	36	4.4	36	2.1	45	2.5	45	0.7	45	0.4	81.3	
31	100	5.9	97	10.4	100	16.6	100	11.1	100	21.1	100	15.3	98	8.7	98	6.9	98	8.2	94	5.6	94	2.3	94	4.8	116.9	
32	50	13.7	46	20.5	50	21.6	40	21.6	40	21.0	40	17.6	40	21.2	45	19.1	45	12.9	53	9.7	52	10.8	51	6.6	196.3	
33	26	5.2	26	9.4	26	16.7	25	17.5	25	13.0	25	14.3	25	15.2	25	13.0	25	10.0	34	7.0	34	4.8	40	6.2	132.3	
34	65	6.9	75	7.6	79	10.1	50	20.4	48	22.9	43	19.9	43	20.4	50	18.6	50	16.2	65	9.1	65	8.6	70	6.0	166.7	
35	69	3.4	60	5.4	60	17.6	58	16.8	58	16.2	54	12.7	54	11.2	50	11.7	49	9.0	43	2.2	45	1.3	56	1.1	108.6	
36	60	3.1	60	11.2	60	15.0	62	17.4	62	17.8	60	15.4	58	18.1	54	12.1	54	9.9	77	1.0	74	0.4	72	0.6	122.0	
37	59	4.1	59	6.9	59	9.5	59	8.5	59	8.8	59	8.1	24	7.0	24	5.7	24	4.0	24	4.2	24	3.0	24	1.5	71.3	
38	100	1.3	100	7.4	100	17.3	100	18.2	100	19.1	96	14.4	80	13.6	80	12.6	60	9.5	100	1.4	100	1.1	100	1.4	117.3	
39	36	4.3	36	7.1	34	15.1	34	14.3	33	13.3	33	11.6	33	6.7	30	4.7	30	6.1	30	4.1	29	9.3	32	9.9	106.5	
40	95	4.6	95	10.3	90	14.0	80	18.3	80	18.5	75	13.0	75	10.4	70	6.6	65	2.7	60	1.6	60	3.6	60	5.3	108.9	
41	40	8.7	39	22.2	37	17.7	36	16.9	34	18.5	35	13.2	25	12.5	20	13.1	15	11.3	15	8.0	17	7.3	25	9.4	158.8	
42	42	5.0	41	11.6	40	14.9	40	14.4	39	15.8	38	12.0	38	5.1	36	6.0	36	7.2	35	3.5	35	0.3	35	2.8	98.6	
43	55	3.1	54	8.3	53	10.1	53	11.7	53	11.3	53	7.5	35	9.5	35	6.6	35	4.7	36	3.2	36	0.7	35	1.1	77.8	
44	140	1.3	136	6.5	130	7.8	130	16.6	118	20.0	136	21.3	136	19.0	130	16.5	170	6.3	130	4.5	110	4.3	110	4.5	128.6	
45	140	7.4	145	10.1	140	17.1	140	18.9	135	19.1	133	16.9	130	14.6	120	14.6	120	11.5	136	5.3	100	2.6	130	4.0	142.1	
46	26	6.1	26	20.3	26	13.8	26	15.4	26	14.4	26	9.5	31	6.3	31	9.0	31	8.9	35	5.4	38	3.4	38	3.8	116.3	
47	150	3.8	145	8.6	140	12.6	140	13.6	135	12.0	130	9.1	130	11.6	125	10.0	125	8.0	150	2.1	150	1.3	140	1.9	94.6	
48	50	10.5	50	11.0	60	16.7	56	18.5	56	18.1	54	15.6	56	16.7	50	12.2	46	9.6	58	1.8	63	2.7	60	7.0	140.4	
49	100	6.5	95	11.1	95	16.5	95	18.4	95	17.3	90	16.3	95	13.0	90	10.4	85	9.0	100	4.5	100	4.5	100	4.1	134.6	
50	42	6.6	42	15.1	40	23.9	39	21.9	39	22.9	39	22.2	39	18.5	39	18.4	39	17.3	36	2.9	36	4.5	36	5.1	179.3	
51	72	1.3	70	4.0	69	7.8	68	12.1	68	13.0	62	5.1	56	2.0	50	5.8	48	3.7	44	8.5	40	5.7	40	4.9	73.2	
52	40	8.6	40	12.0	45	15.0	40	14.6	40	14.6	40	12.2	40	8.5	30	7.3	30	7.4	50	1.2	50	1.4	50	3.8	107.1	
Total.	3458	5.4	3400	9.4	3319	14.4	3218	15.8	3101	16.0	2988	12.8	2828	12.6	2718	10.9	2678	8.3	3204	4.3	3040	3.4	3246	3.8	117.1	

APPENDIX.

Record of a pen of Faverolles, 1 October, '07, to 30 September, '08.

Prices of eggs are those actually received for breakfast eggs, and varied from 8d. to 1s. 9d. per dozen.

No. of Hen.	No. of Eggs laid 1 Oct., '07 to 30 Sept., '08.	Market Value of Eggs for Year.	Average Cost of Food per Hen per annum.	Remarks.
		<i>s.</i> <i>d.</i>	<i>d.</i>	
No. 167 ..	172	13 7½	62.6	Pullet.
„ 31 ..	101	7 10½		Pullet.
„ 126 ..	159	12 8½		Pullet.
„ 142 ..	152	11 2½		1906 bird laid, 227
				eggs first year.
„ 121 ..	170	12 10½		Pullet, sat and
				reared brood.
„ 35 ..	144	12 0½		Pullet.
„ 131 ..	171	12 11½		Pullet.
„ 37 ..	145	10 5		Pullet, sat and reared
				brood of chickens.
„ 128 ..	182	14 6½		Pullet.
„ 164 ..	125	8 4½		Pullet.
Untrapped Eggs ..	80	6 0½		
Totals ..	1,601	£6 2 7½	£2 12 2	

Average egg yield, 160 (omitting No. 31, average of remaining 9 birds equals 166). Total profit, £3 10s. 5½d.

NOTE.—Food bill worked out at an average of 1.3d. per week, Oct.—Feb. (22 weeks). During remainder of year it was slightly under 1d., but 1d. per week was allowed to cover grit, &c.

THE WINTER CLASS.

BY T. P. GILL.

*[An Address given in presenting medals to pupils of Winter Classes
at the Meeting of the County Cork Committee of
Agriculture, April 3rd, 1909.]*

. . . . I am glad to have the opportunity on such an occasion as this to say a word about our winter agricultural class work. When I say such an occasion as this I have in mind the nature of this gathering, representative of some of the progressive forces of this splendid County of Cork, including members of your County Council and your County Committees, as well as workers and instructors engaged upon your County Schemes, and the students of the Winter Classes themselves—all brought together to mark their appreciation of the Winter Classes by bestowing these prizes upon some of the best students. Now, we have not said much publicly about the Winter Class work hitherto—and yet it is perhaps the part of our system of agricultural education which we like the most. It is the part, too, which the people like the most, without any “perhaps.” And it is a part in which our confidence is firm and sure. But we have avoided saying much about it, and that deliberately. You know this winter class work has been going on a fairly long while now, four, five and even six years in some counties. For Cork is not the first county that took it up. Far though you have gone on your way, and though most excellent work you have done and are prepared to do, some other counties have been a bit ahead of you; and in those counties some of the developments that are to be expected as following from the winter classes, such as students’ or young farmers’ societies, agricultural libraries and so forth are already to be seen in the shape of accomplished facts. But it has all gone on quietly; and of set purpose we have encouraged the counties in doing it quietly. And why? Because you must give this plant time to grow deliberately and naturally, if it is to grow well; and because, moreover, it is a good thing, it is a necessary thing to let the lesson of steady, patient work and its sure results, which is the essence of this teaching, results which are truly to be looked for on the farms and in the characters of those who receive this teaching, it is well to let this precious lesson sink into the minds of the students and of all concerned, and take firm root there. This, in fact, is

the first occasion on which, in a very public way, attention is being directed to the Winter Classes, and I am glad that you have provided the occasion, for the work has now reached a stage when it can stand such attention more easily than it could at an earlier stage, and when, moreover, a word of general exposition about it may be rather useful.

SPECIAL IMPORTANCE OF THE WINTER CLASS.

Why then do we think so much of the Winter Class—that is, of this plan, by which, in every county, and in several centres in every county, throughout the winter months, in the slack time of the year for farming, a systematic course of agricultural instruction is given to young farmers without their having to move away from home, or give up working on their farms for the time being? We value the Winter Class for several reasons, and amongst the chief are its facility and directness, and its natural and widespreading influence. You know that, in a simple room in a country district, without any elaborate college buildings or farm, and developing naturally in connection with the work of your county agricultural instructor, and under the eyes of fathers as well as sons, you can have brought home to the very doors of the farmers, in every part of Ireland, a most valuable course of agricultural education. By this means you reach the majority of the young farmers and farmers' sons in the country—those who are now actually tilling the soil—and the fruit of your teaching goes directly into the improvement of the land, and directly into the improvement and elevation of the actual farming class. The residential agricultural school has its place for those who can be spared away from their farms for a year's course, but it can deal with comparatively few, and its sphere is limited compared with the sphere of the winter class. There are Winter Classes now in twenty counties in Ireland, and at fifty centres, and the number of students attending them during the session just ending was nearly nine hundred, and they are growing, and must continue to grow; and, just as you are here in Cork, the people are everywhere delighted with their work. Above all, the young man attending them is actually working on his farm or his father's farm the while; and, when he goes home from the class, in the evening, he talks with his father and his brothers about what he has learned, and he tries to put it in practice upon the farm. The touch between his teaching and his life is most direct, and, apart from the obvious practical results which all can see, there is a deep educational value in this fact. Think of

the young farmers all over Ireland being affected in this manner. In this aspect the Winter Class assumes an importance greater in its way than even that of our highest institutions of agricultural education. These institutions have their necessary function to fulfil—places like the Royal College of Science, and Glasnevin, where instructors and teachers and scientific investigators are trained. Each element is necessary to the whole. But the instructors are but a means to an end. The end is here, in the work of the winter class,—the making of the actual occupier of the soil a better farmer, giving to him a mastery and power over his circumstances which he did not dream of before, revealing to him the immense interest and attractiveness of his calling as the partner of Nature, a cultivator of the land, and raising up in the minds of all who behold his developing intelligence that respect for the agriculturist and his work, without which no nation or society can be in a healthy state, and for want of which Ireland has been long bitterly suffering.

THE METHOD OF THE WINTER CLASS.

The method of the Winter Class has this great advantage—an advantage from an educational as well as from a practical point of view—that it deals with the problems which the student has to face every day in his business. It proceeds, if you will forgive a pedantic expression, from the concrete to the abstract, and, when the mind has been opened in this way about immediate concerns, it can proceed with its thinking much further and deeper. You know the sort of subjects the Winter Class usually deals with—manures (farmyard and artificial), seeds, feeding stuffs, plant diseases, simple account keeping and surveying. There are horticultural demonstrations, and, where possible, demonstrations by veterinary surgeons, and so on. All these are subjects of daily application on the farm, and the student can discuss them when he goes home, and influence his family and friends to bring them into practice. Take, for instance, the question of those imported compound manures and calf meals which have been doing so much damage here in Cork, as they have elsewhere—things of very low grade, and of very high price. The law cannot interfere with them, for it cannot prevent a man selling an article at three or four times its fair value if he can find people foolish enough to buy it from him. The only way that sort of thing can be checked is by educating people so that they will understand what they are getting, and what they ought to get, when they are buying their manures and feeding stuffs. This is one of the accomplishments our boys learn at the Winter Classes. I could tell you of many instances that have been

mentioned to us by proud parents where these boys have brought their knowledge into play at home and saved their fathers and neighbours from the waste and loss they were incurring on this particular head. That is only an example, and, of course, as you know, they not only learn what to avoid, but they are also taught the most effective manure mixtures and feeding stuffs. And they learn how to utilise, in the best way, the valuable series of field experiments which your instructors are carrying out on the holdings of farmers throughout the country—a series of experiments, by the way, such as no other country can equal as reliable data on which to advise farmers. There are some things in which Ireland is beginning to excel in the world, and these experiments, chiefly because they follow a comprehensive plan laid down from the first, and adopted in every part of the country, form one of them. In several counties these field experiments are now largely carried out by past students of the Winter Classes.

FIELD EXPERIMENTS AND THE MANURE TRADE.

And here let me say, if I may digress a moment, that a very gratifying feature in connection with this work is the way in which the Irish manure manufacturers are in effect co-operating with the Department, and are adopting the formulæ, and putting on the market the mixtures that have proved most effective in these field experiments. And not only are the manure manufacturers moving with this work, but also, I am glad to say, the manure retailers. Retailers in several districts have asked the Department for a course of instruction so that they might know the good article from the bad article, and such a course has recently been arranged for traders. The Department issued a circular on the subject early this year to all retailers. A trader in stocking these bad imported manures and feeding stuffs often acts in ignorance, and there are evident signs that many of them are willing and anxious to sell the best and most effective materials at a reasonable trade profit. The truth is the fear and suspicion of the effect of knowledge about this subject that once existed are now passing away, and people in legitimate trade are beginning to experience as the manure manufacturers have done, that the spread of agricultural knowledge means an enormous increase in their business—a greater volume and greater healthiness and security in trade. Do you know that the quantity of artificial manures annually sold in Ireland, as we have reason to believe from evidence

we have examined, has almost doubled within the past ten years, and many another Irish trade connected with agriculture is now on the up grade. You may have seen the other day the speech of the President of the Manchester Wholesale Provision Association advising his fellow provision merchants to keep an eye upon Ireland, telling them that Irish produce was now a better investment than Danish, and quoting the facts brought to light by our export and import returns that Ireland is now the second country as an exporter of butter to the English markets, both in quantity and value; that she is the first country in value of eggs and second in quantity; first in poultry, quantity and value; and first in quality of bacon, third in quantity. Well, that is a digression; and yet it is not quite a digression, for behind all that improvement lies—together with, of course, that great factor, the secure settlement of the occupiers on the land—behind it all lies the work of your County Committees, your schemes, your instructors and your Winter Classes; and behind the further improvement which is to come will lie more and more in the future the influence of the Winter Classes.

DAYLIGHT *versus* EVENING CLASSES.

Now, may I offer you a word or two of advice; and first about a matter of detail. The notion has cropped up here, as it has occasionally done elsewhere, that the Winter Classes should be held in the evening. Actually there have been young men who have objected to the time given to these classes in the daytime. To me this would be almost incredible if a somewhat diversified experience of human nature had not prepared me for most things. But I am sure the enlightened County Committee of Cork will readily dispose of this idea when they realise its bearings. Here is an invaluable course of education, which puts money in the pupils' pockets, which is given them absolutely free, which is brought to their very doors—for the classes are organised in different districts every year, and if a pupil lives three miles away he is given a travelling allowance—which is given in the least busy season of the year, from November to seed time, and which takes only two or three days in each week, from 10 to 4 o'clock; and yet there are young men so dreadfully industrious on their farms that they cannot spare that much time for their own improvement. Let me tell such young men in Cork that in the most intensive tillage districts in Ireland, places where they are carrying on winter dairying and the stall-feeding of cattle, young men owning comparatively large farms

have found it profitable to give up the few necessary hours each week to the winter classes. And the committee will understand that it would be impossible to do much of the winter class work after dark. Many of the demonstrations, such as those of planting, pruning and spraying of fruit trees, the study of pasture grasses, the surveying and veterinary demonstrations—can only be done in daylight. Moreover, young fellows after a day's manual labour in the open air are not in the most receptive state for close mental work. They find it hard even to keep awake. Let the committee set themselves against this misuse of the Winter Class (the most expensive item in connection with which, by the way, the payment of the teachers, is borne by the Department), and let the young farmers of the county realise that a course at a winter class is itself a most valuable prize in every sense of the word, more valuable than any medal, and that they should all aspire to the privilege of obtaining it.

DEVELOPMENTS.

You are beginning now to think of developments, following from the Winter Class work. The students of the Coachford class have, I see, already formed themselves into a Young Farmers' Association, with an excellent programme. In some counties where such students' associations have been longer established, you can see in what admirable ways they work out. Their members conduct field experiments, organise ploughing matches, skilled labour competitions, root and grain shows, arrange lectures and debates amongst themselves, assist in the working of the live stock schemes, establish agricultural libraries, and many young farmers who have attended the winter agricultural classes have been welcomed on the County Agricultural Committee as representatives of their own districts. This development, we have always maintained, was bound to follow the winter classes, as it has followed them in other countries; and it is this development, arising naturally like the crop from the seed, this evidence of an awakened and progressing interest in and love for the farmers' own calling, these signs of potency of mind and of will amongst the young farmers, this tendency to think and act and combine spontaneously—this is the feature of the doings in the Winter Classes which it fills one most with hope and satisfaction to contemplate. Who can say that Ireland is not moving towards a noble future when her young countrymen, in a few years, under the influence of education, can be seen developing like this? If I would say anything by the way of advice it would not be to stimulate you further in this direction, for that is not needed, but rather to say, "Go slow; proceed step by step." I would commend to you in this

matter the example of Carlow, the county that has, perhaps, the best record, so far, with its winter classes. There they began very quietly, first with their debates, for which, by the way, they got leading farmers as well as their own class members to read them papers; then they added ploughing matches, later on grain and root shows; now they have advanced courses for those who have already attended a winter class and want to learn more; and so on, one thing after another, each step deliberately taken after the ground had been made sure; no ambitious plan of action which might break down if attempted all at once. It is this method of patient and systematic work that is so important for us in Ireland to acquire as a habit until it becomes ingrained with us; and we can acquire it as a habit—a second nature—as well as any other peoples, if we only keep it before our minds and try after it on every occasion. There are two things I should like to mention in particular to the students' associations in Cork. They should organise small parties from time to time to visit Clonakilty Farm and School, in order to see there especially the series of experiments on crops and stock by which Mr. Duncan is already making the name of Clonakilty famous in the agricultural world. You know the experiments at this and other stations of ours are quoted and collated in scientific publications in other countries, and I was impressed when at a foreign Agricultural Department recently, at having some of our own experiments quoted to me. The other thing I would commend to the County Cork students is the labourer and farmer question. I should like to say something more on this topic, but I can only commend it to them now. Let them study it and work at it. This question of the community of interests and the good understanding which should be cultivated between farmers and labourers is one of the most vital subjects they can consider. And I should like to discuss the excellent provisions you are making for labourers in your county schemes, and your tillage and farm prize scheme, but there is no time for that.

And now in conclusion, I would say to these young men, the hope as they are of the country, that in working thus to improve themselves they are doing a great work for Ireland. That must be a stimulating thought for them. It takes many forms of effort, political and other, to build up a country. All are necessary in their way. But there is none so fruitful and none so indispensable as the effort in which these young men are taking their share, the effort of the people of the country individually to make themselves efficient as workers in their own particular callings, and capable and worthy as

citizens and as men in their own local sphere; for that is the only way of making secure the foundations of the moral and material welfare of a nation.

APPENDIX.

WINTER AGRICULTURAL CLASSES SCHEME, 1908-9.

COUNTY.	Class Centres.	Duration of Course in Weeks.	Number of days weekly on which class met.	Number of Pupils admitted.	Remarks
Antrim, . .	Ballyclare . .	17	2	15	
	Ballymena . .	16	2	21	
Armagh, . .	Newtownhamilton . .	17	2	23	
	Jerrettspass . .	17	2	20	
Carlow, . .	Borris . .	16	2	17	
	Leighlinbridge . .	15	2	22	
Clare, . .	Sixmillebridge . .	21	2	15	
	Ennistymon . .	20	2	21	
	Kilrush . .	20	2	23	
Cork, . .	Coachford . .	20	2	30	
	Mitchelstown, . .	20	2	25	
	Leap . .	20	2	24	
	Ballymacoda . .	19	2	24	
	Glanhaue . .	19	2	18	
	Drinoleague . .	19	2	13	
	Ballydehob . .	19	2	24	
Down, . .	Rathfriland . .	6*	2	5	* Discontinued owing to small attendance.
	Downpatrick . .	18	2 (½ on termination of Rathfriland Class).	17	
	Portaferry . .	17	2	15	
Fermanagh, . .	Irvinestown . .	17	2	8	
	Llanaskea . .	17	2	8	
Kildare, . .	Naas . .	12*	3	8 .	* Discontinued owing to small attendance.
	Athy . .	16	3	11	
Kilkenny . .	Callan . .	19	2	18	
	Thomastown . .	19	2	28	
King's . .	Tinneycross . .	7*	3	10	* Class arranged to close at Christmas.
Londonderry, . .	Coleraine . .	17	2	16	
	Maghera . .	17	2	24	
Longford, . .	Ballinaloe . .	13	2	13	
	Drumlish . .	15	2	18	
Meath, . .	Rathinolyon . .	16	2	22	
	Oldcastle . .	16	2	23	
Sligo, . .	Easkey . .	21	2	29	
	Skreen . .	20	2	19	
Tipperary, N.R..	Borrisokane . .	19	2	15	
	Roscrea . .	19	2	18	
	Thurles . .	19	2	17	
Tipperary, S.R.	Cahir . .	17	2	22	
	Fethard . .	17	2	10	
Tyrone, . .	Beltany . .	20	2	14	
	Donemana . .	20	2	15	
	Carrowcoleman . .	19	2	9	
Waterford, . .	Dungarvan . .	15	2	16	
	Rathgormack . .	14	2	16	
Westmeath, . .	Castlepollard . .	17	2	14	
	Ballinagore . .	7*	2	10	* Class discontinued owing to small attendance.
Wexford, . .	Craanford . .	18	2	21	
	Enniscorthy . .	17	2	21	
	Wexford . .	18	2	13	
	Ramsgrange . .	17	3	17	

Total Number of Class Centres, 50
 " " Pupils admitted, 875

PIG-FEEDING EXPERIMENTS.

AT CLONAKILTY AGRICULTURAL STATION, 1907-1908.

By common consent one penny per gallon is generally the value put on separated milk, when used on the farm for calves or pigs. Fed to well-bred, thrifty, winter and early spring calves it may be worth this sum, and perhaps more. On the other hand, when fed to second-rate and inferior calves dropped in the late spring and summer months, it is extremely doubtful if one penny per gallon is returned in a great number of cases. As a preliminary to future tests on this subject, it was found that two calves dropped in the last week of April, 1907, and two newly dropped calves purchased in the first week in June, left a fraction over one penny per gallon for the separated milk on which they were fed, but the number of calves experimented upon was too small to afford reliable data on which to form a general conclusion. During the coming summer it is hoped that experiments may be carried out on a larger scale so as to enable a comparison to be made on the relative value of separated milk when fed to calves and pigs.

During the summer months of 1907 and 1908, experiments were carried out on pigs, the immediate objects of which were to ascertain the value of separated milk for pig-feeding, and to determine how far the price of pork may fall before it fails to give one penny per gallon for the separated milk.

In April, 1907, fifteen bonhams were taken from two litters bred on the station farm. Nine were pedigree Large Yorks; the six others were by a pure-bred boar out of a sow which, although not pure-bred, showed a good deal of Large York blood. They were divided into three lots of five each—three pure and two half-bred in each lot. When these had been nearly all fed and sold, a second lot of six bonhams was purchased in Clonakilty in July and divided into three lots as before and fed on the same foods.

In May, 1908, the experiment was again repeated on the same lines on eighteen bonhams bred on the station farm—this time from a different but pure-bred Large York boar. The total number of pigs experimented on altogether was, therefore, thirty-nine, divided into three lots of thirteen each.

The food supplied was as follows:—

Lot 1.—1 part by weight of meal,

4 parts „ „ potatoes,

6 „ „ „ separated milk.

Lot 2.—2 parts by weight of meal,

6 „ „ „ separated milk.

Lot 3.—2 parts by weight of meal,

4 „ „ „ potatoes.

The meal consisted of a mixture of about equal parts of maize and barley, with a small quantity of pollard. It was assumed, and the assumption is based on well known Danish experiments, that 4 lb. potatoes or 6 lb. separated milk (hereafter called “meal equivalent”) are each equal to 1 lb. of meal. Each lot was allowed as much food as it would eat.

Table I shows the live-weight of the pigs when the experiment was started, the live-weight when sold, the total increase, number of days fed, average daily gain, the dead-weight, and the percentage of dead to live-weight (unfasted).

TABLE I.

Lot	Weight (unfasted) when experiment started	Weight when sold (unfasted)	Total increase	Time fed	Average daily gain.	Dead weight.	Ratio of dead to live weight (un- fasted)
	Cwt. qr. lb.	Cwt. qr. lb.	Cwt. qr. lb.	Days.	lb.	Cwt. qr. lb.	%
1.	7 0 10	26 3 12	19 3 2	90.5	1.88	19 1 6	71.87
2.	7 0 19	27 0 11	19 3 20	88.0	1.95	19 1 7	71.26
3.	7 0 14	26 1 7	19 0 21	151.5	1.09	19 0 1	72.24

Lots 1 and 2 took nearly the same time—about three months—to feed. The increase and daily average gain were practically the same, with a very slight advantage in favour of the latter. On the other hand, lot 3 took about five months to feed, and the average daily gain was only a little over one-half that of either of the two other lots.

Table II shows the total quantity of food consumed, quantity of food calculated to its equivalent in meal, and number of meal equivalents taken to produce 1 lb. live-weight.

TABLE II.

Lots	Total food consumed.	Total food in meal equivalents	Meal equivalents to produce 1 lb. live weight.
1	2748 lb. meal 16488 „ milk 10992 „ potatoes	2748 } 2748* } = 8244 2748** }	3.72
2	5684 lb. meal 17052 „ milk	5684 } 2842 } = 8526	3.82
3	7442.5 lb. meal 14885 „ potatoes	7442.5 } 3721.25 } = 11163.75	5.20

* One-sixth of milk.

** One-fourth of potatoes.

In other words, to produce 100 lb. live-weight, lot 1 took 372, lot 2 took 382, and lot 3 took 520 meal equivalents.

The price that can be realised at any time for separated milk when fed to pigs must depend in a large measure on the price realised for the pork, the first cost of the bonhams, the cost of the other foods supplied along with the milk, the class of pigs fed, and the nature of the accommodation.

The pigs were all consigned to Messrs. W. Shaw & Sons, Limerick, as soon as they were ready to kill. The prices realised ranged from 43s. to 52s. per cwt. carcase weight, after deducting killing dues. The average for the 39 pigs was 48s. 3d.

In the balance sheet of income and expenditure the bonhams of 1907 are all charged at the rate paid for the six purchased in Clonakilty, viz., 4s. per cwt. live weight. The bonhams of 1908 are charged at what they would have realised had they been sold when the experiment started. The average price paid for the maize was £6 11s. 0d. per ton: to this has to be added the cost of grinding, which was done with a mill erected at the farm for the purpose. Most of the barley was grown on the farm: the remainder was purchased in Clonakilty at £5 per ton. Pollard cost £6 5s. 0d. per ton.

The average cost of the mixed ground meal was £6 12s. 6d. at the farm. The price charged for the potatoes is £2 per ton. As a rule,

LOT 3.

	£	s.	d.		£	s.	d.
13 Bonhams	13	2	8				
T. c. q. lb.				c. q. lb.			
Meal 3 6 1 22 @ 6/7½				Pork 19 0 1 @ 48/3	45	17	2
per cwt.	22	0	2	Balance being loss	6	3	10
T. c. q. lb.							
Potatoes 6 12 3 17 @							
£2	13	5	9				
Attendance	1	14	8				
Coal	1	4	9				
Carting Pigs to railway	0	6	6				
Interest on capital	0	6	6				
	52	1	0		52	1	0

Exception might be taken to the charge for attendance. This must of necessity vary considerably with the facilities for cooking and preparing the food, feeding and cleaning. A new cooking apparatus has been put in whereby potatoes can be steamed, water boiled, and food prepared for calves at the same time. The pig houses have been recently erected by the Department and arranged to avoid all unnecessary labour both in feeding and cleaning, so that the cost in this respect is reduced to a minimum. Before the new cooking apparatus was put in, and the alterations in the farm buildings made, the cost for attendance was at least double. However, this is an item that does not affect the main issue very materially. Supposing it were doubled the cost of production would be increased only by about 1s. per cwt. Moreover, it is often entirely ignored by the feeder. The cost of firing also varies with the price of fuel, the number of pigs fed, and the nature of their food. Where only, say, six or eight pigs are fed at one time the cooking could be done on the kitchen fire with little extra expense. But where a fire has to be provided for the express purpose of cooking, the larger the number of pigs fed the less the expense per pig. In this experiment it took nearly half a cwt. of coal to boil 4 cwt. of potatoes and to heat sufficient water to scald 2 cwt. of meal. Owing to the extra food that had to be cooked, and the longer time taken to feed, the cost of both firing and attendance is much higher for lot 3 than for either of the other two lots. Lot 2 is also charged less for firing than lot 1, as only water had to be boiled for scalding meal. The value of manure is set against straw for litter and rent of houses.

In Table III no allowance is made for risk. This is an item that varies from almost nothing to a considerable sum. However, as it is

a factor that should be taken into account when calculating cost of production, each individual can make an allowance according to the loss of pigs by death or other causes which he expects to suffer.

One more Table (IV) may be allowed. It shows the cost of production per cwt. both for live and dead weights. In column A the cost of bonhams and food only are taken into account; in column B the total cost of production as detailed in the table of income and expenditure is included.

TABLE IV.

Lot.	A		B	
	Cost of production per cwt. bonhams and food only		Total cost of production per cwt.	
	Live weight	Dead weight	Live weight	Dead weight
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1	1 8 1	1 19 0	1 9 7	2 1 7
2	1 7 3	1 18 3	1 8 9	2 0 4
3	1 16 10	2 10 11	1 19 7	2 14 9

In the Danish experiments already referred to 4 lb. of potatoes were found to be equivalent to 1 lb. of meal. In these experiments the quantity of potatoes was slightly less, viz., about $3\frac{3}{4}$ lb.

On a comparison of Tables II and IV, it will be noticed that, although lot 1 had a slightly lower meal equivalent than lot 2, the cost of production was 1s. 3d. per cwt. higher. This is accounted for by the fact that when meal is selling at £6 12s. 6d. per ton the relative value of potatoes for pig-feeding, when fed along with meal and milk, is about 35s. per ton. If we substitute this price for the £2 charged for the potatoes in table of income and expenditure, the cost of production for lots 1 and 2 will be practically the same.

In lot 3, where the potatoes are fed with meal alone, the price realised for the potatoes is about 22s. per ton. Milk, then, when fed along with meal and potatoes, has a value above its intrinsic worth. inasmuch as it enables the feeder to realise a better return from other articles of diet.

To return to the primary objects of the experiment, namely, to ascertain the value of separated milk for pig-feeding, and to determine how far the price of pork may fall before it fails to produce 1d. per gallon for the separated milk, taking the aforementioned prices for pork, bonhams, meal, labour, etc., the answers to the two problems, as they appear to be furnished by the experiment, are as follows:—

Separated milk fed to pigs along with meal and potatoes gave a return of about 2d. per gallon when pork was sold at 48s. 3d. per cwt., the average price realised for the 39 pigs sold. An increase of 7s. per cwt. in the price of pork was equal to an extra penny per gallon for the milk.

To return 1d. per gallon for the separated milk pork must not fall below 40s. 4d. per cwt.

Of the different factors that determine the value of separated milk for pig-feeding the most important is the price of pork current when the pigs are ready for the market. Between the times the experimental pigs were sold, pigs of equal quality were sold off the farm at 39s. per cwt.; and as the price paid for meal was slightly higher in the latter case the return for milk must have been under 1d. per gallon.

One of the pigs in lot 3 did badly all along which increased the average number of days fed, and the cost of production; but after making full allowance on this score the advantage of, nay the absolute necessity for, milk in the economic production of pork is evident. A comparison of lots 1 and 2 with lot 3 demonstrates this point very forcibly. Whereas the lots that got milk left a fair profit, the lot that got no milk caused a serious loss. This simply corroborates the experience of the best feeders. In some districts in Ireland where pig-rearing and feeding is the mainstay of the farmer the calves are sold when a few weeks old, so that the milk may be reserved for the pigs.

The question naturally arises does it pay to feed pigs without milk? Where a market can be got for saleable potatoes it is very doubtful whether they should be fed to pigs. More especially is this the case where milk does not enter into or only forms a very small part of the food.

It is not claimed that the above foods or combinations of foods are the most economical, or that with different pigs better results might not be obtained; but when one considers that the average daily gain for lots 1 and 2 was nearly 2 lbs., and that the meal equivalent to produce 1 lb. live-weight in lot 1 was only 3.72 lb., not much improvement could be looked for.

J. L. DUNCAN.

THE WARBLE FLIES.

FURTHER EXPERIMENTS AS TO LIFE-HISTORY AND TREATMENT.

By PROF. GEO. H. CARPENTER, B.Sc. and W. F. PRENDERGAST,
A.R.C.Sc.

The paper on this subject, published in the Department's JOURNAL for January, 1908 (Vol. VIII., No. 2, pp. 227-246), described the experiments and observations carried on at the Department's Agricultural Station at Ballyhaise, Co. Cavan, up to the summer of 1907. It is thought desirable to publish now the further results that have been obtained from the work of 1907, and, so far as the results are yet known, from that of last year. From the practical standpoint, we believe that we have strong confirmation of the recommendation made in the former report systematically to destroy the warble-maggots in spring.

With regard to the beginning of the insect's life-history we have found little reason to modify the opinion, expressed in the previous paper, in favour of the maggots' entrance through the skin. The experiment with muzzled calves during 1907-8 seemed indeed to support rather strongly the theory of the maggots' entrance by the mouth, but those carried on during 1908-9 tend to confirm the results of 1906-7.

We had the opportunity of observing the presence during late autumn and winter of young maggots in the sub-mucous coat of the gullet of a number of two-year-old bullocks and heifers slaughtered for the Dublin market.

As stated in the previous report, 2090 maggots were squeezed out * of the 194 cattle on the Ballyhaise farm in

**Results of
Maggot
Destruction.**

In the spring of 1907—an average of 10·77 per beast. In the spring of 1908, 132 of these cattle were still on the farm, and had been left throughout the summer of 1907 without any kind of dressing or protection against the attacks of the fly. From these cattle 586 maggots were squeezed out, an average of 4·44 per beast. We find, therefore, that on the Ballyhaise farm the average number of warbles has been reduced by 58·8 per cent. after a thorough squeezing-out campaign. It must not be forgotten that the summer of 1907 was on the whole wet and cool, and that sunny, hot weather is always most attractive to warble-flies. But, as during the four previous years over which these experiments have now extended, the average number of warbles for each beast on the farm has never fallen below 9 (see Tables, pp. 470-471), we feel confident that the remarkable reduction in the spring of 1908 must be largely attributed to the squeezing-out policy. A study of the detailed figures given below confirms this view, for it will be seen that, in most cases, the animals with a high number of warbles in 1908 were grazed during the summer of 1907 on the outskirts of the farm, where they were more exposed to the attacks of flies from the surrounding country than those grazed near the centre of the farm, on which we may safely state that few, if any, flies had been reared during the preceding summer. So far as we can judge from the count taken at Ballyhaise, on April 6th, the number of warbles this spring has been kept down to the same low average (about 4·4 per beast). We fear that there is little chance of a lower average until the maggots are destroyed also on neighbouring farms.

Comments have been made as to the supposed difficulty of squeezing out warble-maggots. It may be advisable to state that the operation is easier in wet than in dry weather. A hard-skinned beast can be made more pliable by a preliminary washing with salt solution— $\frac{1}{4}$ -lb. salt to 3 gallons of water. The skin heals quickly after a maggot has been squeezed out; when several have been removed from a small area a light rub of some antiseptic may be applied with some advantage. We cannot recommend, as an alternative to squeezing out, killing the maggots by thrusting a large pin or fine nail through the breathing hole. Having tried this method, we find that much irritation is caused to the beast through the decay of the maggot beneath the skin, and that, three weeks after the operation, there is increased swelling and soreness.

Warbles on Untreated Cattle after Squeezing-out.

COWS.

No. of Anim. mal.	Description of Animals.	No. of Warbles, 1908.	No. of Anim. mal.	Description of Animals.	No. of Warbles, 1908.	
3	Sixty-four Cows grazed near centre of farm.	0	52		1	Average number of Warbles per cow, 1.7.
4a		0	54		4	
5		1	55		0	
6		0	57		0	
7		0	58		9	
8		2	59		3	
9		0	60		5	
10		4	62		1	
12		4	63		0	
13		0	64		1	
14		0	65		0	
15		2	66		0	
16		0	67		0	
18		0	68		0	
20		2	69		0	
21		0	70		0	
23		2	72		0	
25		6	73		0	
27		3	75		3	
29a		0	78		4	
30		1	81		2	
31		2	82		4	
33		1	83		0	
34		4	84		3	
35		3	88		1	
36		0	316		0	
40		1	317		0	
43		0	318		0	
44		0	319		4	
47		5	321		1	
48		2	321		6	
50		4				
51		4				
				Total Warbles, ...	105	

COWS.

No. of Animal.	Description of Animals.	No. of Warbles, 1908.	Av. No. of Warbles per head.
11	Eight Cows grazed near outskirts of farm, summer, 1907.	11	13.3
17		34	
29		12	
37		8	
42		10	
45		15	
77		8	
90		9	
1	Twenty-one Cows (first calf) grazed near outskirts of farm, summer, 1907. Age, summer, 1908, three years.	4	7
2		6	
4		4	
19		6	
24		3	
26		14	
28		6	
32		2	
38		3	
41		11	
56		10	
61		8	
71		14	
74		9	
76		6	
79		16	
85		3	
86		3	
87		12	
89		3	
91		4	

YEARLINGS.

No. of Animal.	Description of Animal.	No. of Warbles, 1908.	Av. No. of Warbles per head.
1	Ten Yearlings grazed on farm, not confined to any particular part of it, summer, 1907. Age, summer, 1908, two years.	0	1
7a		0	
10		0	
13a		0	
16a		10	
18a		0	
19a		0	
32		0	
33		0	
39		0	

CALVES, 1907-8.

No. of Animal.	Description of Animals.	No. of Warbles, 1908.	Av. No. of Warbles, per head.
3	Twenty-six Calves grazed near centre of farm, summer, 1907. Yearlings, 1908.	8	6.5
5		17	
6		8	
8		6	
9		1	
10		4	
11		3	
12		7	
14		9	
15		9	
18		6	
19		3	
20		3	
23		3	
24		9	
25		10	
27		2	
29		9	
31		5	
32		5	
33		1	
35	White. Black.	14	
38		5	
47		10	
?		7	
?		6	
2	Three Calves grazed near outskirts of farm, summer, 1907. Yearlings, 1908.	20	18.33
43		18	
44		17	
	Total number of Warbles from 132 cattle grazed on farm, summer, 1907.	586	4.4

CALVES, 1908-9.

No. of Animal.	Description of Animals.	No. of Warbles, April, 1909.	Av. No. of Warbles per head.
3A	Nine Calves grazed on farm, summer, 1908. Yearlings, 1909.	0	4.33
4A		6	
6A		3	
12A		4	
13A		2	
18		4	
30		9	
58		8	
76		3	

As an appendix to the above figures it may be stated that fifteen two-year olds (yearlings in 1907) bought in from local fairs in the spring of 1908 had an average of 6 warbles per beast, while twenty animals of various ages, bought during the summer of 1907 and sold in 1908, had an average of 1·7 warbles per beast. No great importance can be attached to these figures, as some of the twenty were sold before the final counting of warbles had been made. But it will be seen that the average of 1·7 among the twenty—many of which had been grazed during the summer of 1907 on the Ballyhaise farm after the squeezing-out campaign—was far lower than the average (6) of the fifteen bought in from local fairs. Six cattle bought at the end of last summer (1908) have at present (April, 1909) an average of 14 warbles per beast.

The difference between the average (1·7) number of warbles on the 64 cows grazed near the centre of the farm and the averages (13·3 and 7 respectively) of 8 and 21 cows grazed near the outskirts is most remarkable. The difference between the average number of warbles (6·5) on the 26 calves grazed during 1907, in the centre of the farm, and the number (18·33) on the three calves grazed near the outskirts, is also striking, though the fewness of the latter detracts from the importance of the result. For some inexplicable reason, calves seemed specially liable to fly-attack during the summer of 1907. The comparatively high average (7·7) shown by all the calves on the farm contrasts strongly with the low average (1) shown by the yearlings; and it will be seen that nine out of the ten animals, grazed as yearlings during 1907, had no warbles at all in 1908. This result differs markedly from the preceding years' experience, which convinced us that yearlings are on the whole more liable than calves to have eggs laid on them by the flies.

The general effect of the squeezing-out campaign can be estimated from an inspection of the accompanying graphic tables.

TABLE I.—All Beasts on farm together.

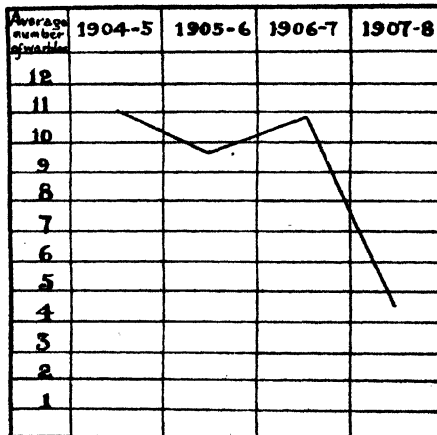
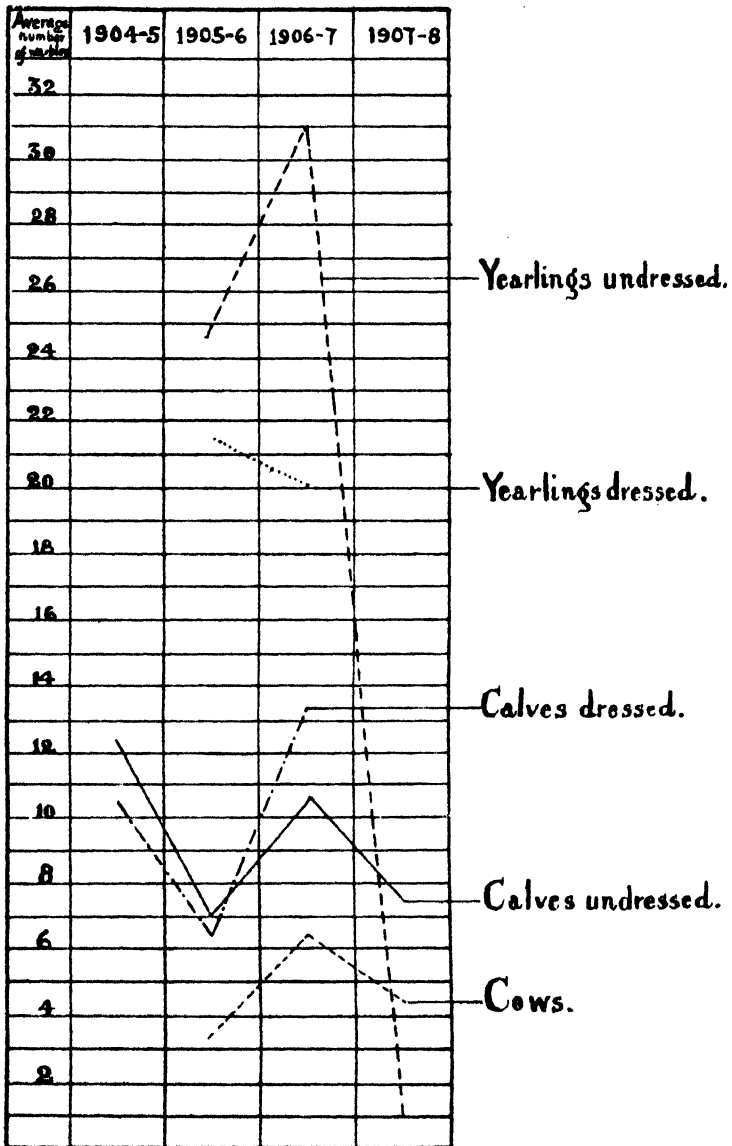


TABLE II.—Beasts on farm classified.



It is evident that the yearlings were far more benefited by "squeezing-out" during the spring of 1907, than either the cows or calves.

On account of the general destruction of maggots, carried out at Ballyhaise in the spring of 1908 as in 1907, only a few specimens of maggots, from milch cows, were preserved for rearing. A maggot, which emerged from the skin on 13th May, pupated and produced on 22nd June a fly which proved to belong to *Hypoderma bovis*. On 24th June a specimen of *H. lineata* was reared from a maggot which had come out of its warble on 24th May. On 30th May another maggot came out, which, after pupation, produced, on 1st July, a specimen of *H. bovis*. The pupal stage in these two last cases lasted for only 31 or 32 days, considerably less than the average period—about seven weeks—noticed by us in former years, and approximating to the 25 or 26 days recorded by Miss Ormerod. The first mentioned insect had a pupal period of 39 days.

A noteworthy fact observed during 1908 was the appearance of a warble on one of the cows towards the end of August. Such a date is exceptionally late, and may probably be explained as due to an exceptionally late oviposition in the autumn of 1907. This maggot was, on its emergence, smaller and paler than a normal fully-fed specimen, and, although treated in the same way as the others, it never completed its development into a fly. On opening the puparium some months later, imperfect rudiments of the head, legs and wings of the perfect insect could be distinguished.

The muzzling test was again carried out during the summer of 1907.

Muzzling Experiment.

The treatment was similar to that of the previous summer, fully described in the former report, with the exception of the method adopted for covering the forelimbs. In 1906 the calf, whilst feeding, had the forelimbs clothed with leggings. This was a very troublesome process and was, moreover, not satisfactory, as the tying was easily displaced and the leggings then dropped off. In 1907 the following simple but effective means of covering the forelimbs was adopted: A light sack, such as is used for holding maize or corn, was firmly nailed to the lower part of the stakes or "bales" in which the animal was confined at feeding time. A longitudinal slit was made along the centre of the sack, large enough to admit the head of the calf. The top part of the sack thus hung on the neck of the calf, and the sack being firmly attached to the lower part of the "bales," an apron was provided which completely prevented the licking of the forelimbs.

The calves were tied between stakes in the field on several of the warmest days during the summer, in order to observe the egg-laying

of the fly. The fly was not seen near the animals, and on one day only were the animals observed to be more restless and more excited than was usual.

Result of Muzzling, 1907-8.

Number of Calf.	Description of Animals.	Number of Warbles, 1908.	Average Number.
7 13	Two Calves muzzled in field by day, summer, 1907, and tied with stakes and apron at night	0 0	0
.	Twenty-nine Calves unmuzzled and untreated, summer, 1907, (see above, p. 469)	220	7.7

Unfortunately the twenty-nine unmuzzled calves were, for several days during the muzzling period of 1907, grazed in a field some distance from the one in which the muzzled calves were confined. The circumstance, together with the small number muzzled, took from the decisiveness of the result obtained. But the fact that the two calves muzzled during 1907 were the only two animals on the farm that, as yearlings, were entirely free from warbles in the spring of 1908, was highly suggestive. We could not but regard the result as giving some support to the view that the young maggot (or the egg) is taken in by the beast's mouth, and as suggesting that the tying precautions adopted in the summer of 1906 were in some way ineffectual in preventing the animals from licking their forelimbs.

With much eagerness, therefore, have we looked for the result of the experiment of last year, when we had six calves muzzled and tied with the same precautions as in 1907, but otherwise under precisely the same conditions as the nine calves tabulated above (p. 469). Everyone of these animals has, as can be seen from the table below, three or more warbles in the present month, so that the opinion put forward in the previous Report that the maggots gain entrance to the body through the beast's skin seems to be strongly confirmed.

Result of Muzzling, 1908-9.

No. of Animal.	Description of Animals.	Number of Warbles, April, 1909.	Average Number.
51	Six Calves, muzzled in field by day, summer, 1908, and tied with stakes and apron at night.	7	4.66
55		3	
56		3	
60		3	
63		9	
64	Nine Calves unmuzzled and untreated, summer, 1908 (see above, p. 469).	3	4.33
		39	

We must admit that these results surprise us greatly. From the freedom from warbles of the two calves kept muzzled during the summer of 1907, we expected that the experiments of 1908-9 would have confirmed the theory of entrance through the mouth. Knowing that many students of the question continue to believe that the maggots do enter by the mouth, in spite of the results obtained in 1906-7, we think it well to draw attention to any possible sources of error. We know that on 6th June, 1908, calf No. 60 pulled its head out of the bales during feeding time, and was not noticed for some minutes. And on 23rd July, during great heat, No. 55, when running through a wood, tore its muzzle off and almost certainly licked itself. Nevertheless these two calves have fewer warbles than some (No. 51, 63) with which the muzzling and tying operations were carried on without accident.

These muzzled calves sometimes try to lick themselves and are able to cover the hair with frothy saliva. But the tongue cannot, of course, touch the hairs, and it is hard to believe that the warble-fly's eggs can be sucked in through the holes of the leather muzzles. If the maggot's normal mode of entrance is by the mouth it seems certain that the muzzling must afford very considerable, even if imperfect, protection; yet the number of warbles among the muzzled calves is rather greater than among the control animals. On the whole, therefore, we believe that the theory of entrance through the skin is strongly confirmed by our latest work.

But we hope to have the opportunity of trying similar experiments during the summer of this year, and arranging matters so as to eliminate all possible sources of error.

Through the courtesy of Mr. J. A. Doyle, of Rathgar, Dublin, we have had the opportunity of examining the gullets of a number of heifers and bullocks of two to three years old, slaughtered for the Dublin market during October, November and December, 1908.

Maggots in the Gullet.

In many of these maggots were found, and in most cases they were imbedded in the connective tissue of the sub-mucous coat (see fig. 1), with the axis of the maggot lying along the direction of the gullet. In some the head of the maggot was directed upwards, in others downwards; most were near the stomach, but some were near the pharynx, as if they were wandering to and fro in the sub-mucous coat for a period of several weeks. One was found lying in the cavity of the gullet, but no trace of perforation of the mucous coat could be detected. The effect of the maggot on the sub-mucous tissue is to cause a small amount of yellow discoloration due to the formation of pus.

The following is a record of the observations:—

27th October, 1908.—Five gullets received, from cattle grazed near Drogheda:—

No. 1. Contained two larvæ in the sub-mucous coat, one half-way down; the other close to the stomach.

No. 2. Contained seven larvæ, all in sub-mucous coat. One very small specimen (5 mm. long) was close to the stomach; one was close to the pharynx, with its head end pointing upwards; the rest intermediate in position.

No. 3. { Had no larvæ.

No. 4. }

No. 5. Contained two larvæ; one was on the surface of the mucous coat, about two inches above the stomach; the other was in the sub-mucous coat, half-way up the gullet, with its head downwards.

10th November, 1908.—Three gullets received, from cattle grazed near Edenderry, King's County:—

No. 6. { Had no larvæ.

No. 7. }

No. 8. Contained thirteen larvæ, all situated near the lower end of the gullet, near the stomach; eleven were in the sub-mucous coat, and, as is usually the case, could be distinguished through the mucous coat when the slit gullet was stretched over the fingers and examined internally. The two others were deeper in the sub-mucous coat, and only became evident after removal of the mucosa.

8th December, 1908.—Four gullets received, from cattle grazed near Nobber, Co. Meath:—

No. 9. Contained four larvæ, two near the stomach and two half-way up the gullet, all in the sub-mucous coat.

No. 10. }
 No. 11. } Had no larvæ.
 No. 12. }

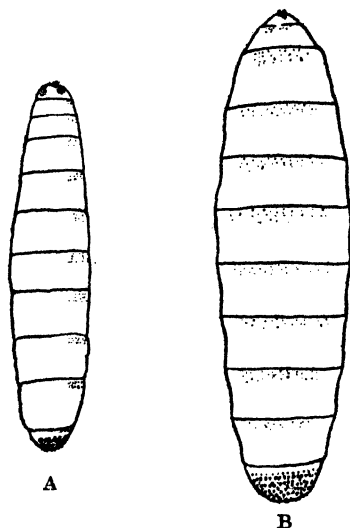


Fig. 2.

A. Young Warble-maggot (*Hypoderma*), side view.

B. Rather older specimen, ventral view.

From Gullets of Cattle, October, 1908.

Magnified 10 times.

The smallest larva (fig. 2A) found was 5 mm. ($\frac{1}{4}$ -inch long), the others (fig. 2B) measured 7 mm. (about $\frac{3}{8}$ -inch). They resemble closely the early larvæ described by Jost, Ormerod and Curtice, the smaller one being probably referable to the first, and the larger specimens to the second stage in the larval history. The small larva has a number of stout, black spines around the mouth, as well as on the terminal segment around the spiracles or air-holes. In the larger maggots, the hinder spines are still prominent, but those around the mouth are very few. In all the larvæ there are minute but distinct spines arranged in transverse rows across nine of the body segments. Curtice and Riley state that in *H. lineata* maggots of the second stage, 12 mm. long, there are no spines on the body segments. In the 7 mm. larvæ that we have examined they are so minute that they might be readily overlooked.

We hope to make further observations on this interesting subject during the present year, and to determine the earliest date at which maggots may be detected in the gullet-wall.

THE WARBLE FLIES.



Fig. 1.

Piece of Heifer's Gullet cut open. The innermost (mucous) coat has shrunk, so as to expose Warble-maggots embedded in sub-mucous coat, visible beneath letters A, B.

PROTECTION OF WOODLANDS IN IRELAND.*

III.—*Protection against Domestic Animals, Rabbits, Squirrels, &c.*

The fact that trees are frequently planted in Ireland without any protection against farm animals, rabbits, squirrels, etc., indicates the desirability of this subject being dealt with.

Occasionally a few trees planted in the corner of a field, or in a plantation to which animals have access, may survive after a long struggle, and ultimately develop into stunted and unsightly specimens. But the general result of leaving plantations unprotected goes to prove that the time and money spent on planting them have been practically thrown away, and that no economy has resulted from the initial saving of expenditure.

As regards fencing against rabbits alone, it is, of course, a question whether these animals are sufficiently few in numbers to render fencing unnecessary, but in most parts of Ireland, rabbits are too numerous for this saving to be effected, and either wire-netting, or some other form of protection, must be provided.

Wherever trees of small size are planted it is absolutely necessary that the ground should first be securely fenced against sheep, cattle and donkeys for the first ten years, at the very least, and against horses and goats for longer periods. In addition to the damage done by the browsing of all graminivorous animals, horses and goats will bark trees of almost any age, especially those which are long in developing true bark scales, such as ash, beech, and several of the conifers. As a rule those animals should never be allowed into a plantation of any age.

It is unnecessary to describe in detail the various kinds of fences which are frequently used for fencing plantations, but the following types may be mentioned:—1st. Stone walls; 2nd. Hedges and banks; 3rd. Iron or wire fences.

* The first Section of this Article appeared in the issue of the *Journal* for July, 1908, Vol. VIII., No. 4, page 627.

The second Section appeared in the issue of the *Journal* for January, 1909, Vol. X., No. 2, page 246.

The following Sections will be published in subsequent issues:—

IV. "Insect Injuries to Trees and Methods of Prevention (*Pine Beetle, Pine Weevil, Pine Saw-fly, Giant Sirex, Goat Moth, Beech Felled Scale, etc.*)."

V. "Fungoid Diseases of Trees (*Larch Canker, Ash and Beech Canker, Root Rot and Honey Fungus, etc.*)."

Where stones are plentiful, and the sub-soil or surface of the ground of a rocky nature, the stone wall is probably the cheapest and most durable and effective form of fence that can be erected. Its initial expense is high, but this is usually compensated for in the long run by its durability, and the ease with which it can be maintained. In plantations adjoining high roads, or ground heavily stocked with cattle, it is probably better to incur such expense at the outset wherever the soil is not suitable for throwing up a bank and planting a hedge. Stone walls may be built of dry stone alone, or with the addition of mortar, and the latter are the most satisfactory as plantation fences, as they are practically rabbit-proof and save much trouble in various ways. A coping of flat stones set up edgewise should be added at the top, and a height of five feet given the structure altogether. A wall of this description will cost from 3s. to 4s. per lineal yard, and is only recommended where suitable stones are plentiful and cheap.

The most common form of fence for plantation purposes is the ditch, bank and hedge. This form of fence is easily erected on all ground which can be dug to a depth of two feet or so. On clays and heavy loams, this form of fence is all that could be desired, but on light, dry and crumbly soils a difficulty often arises in keeping up the bank for any length of time. By facing the bank with stones, and sloping it rather more than is usual on clay soils, the bank can, however, usually be made firm enough for practical purposes.

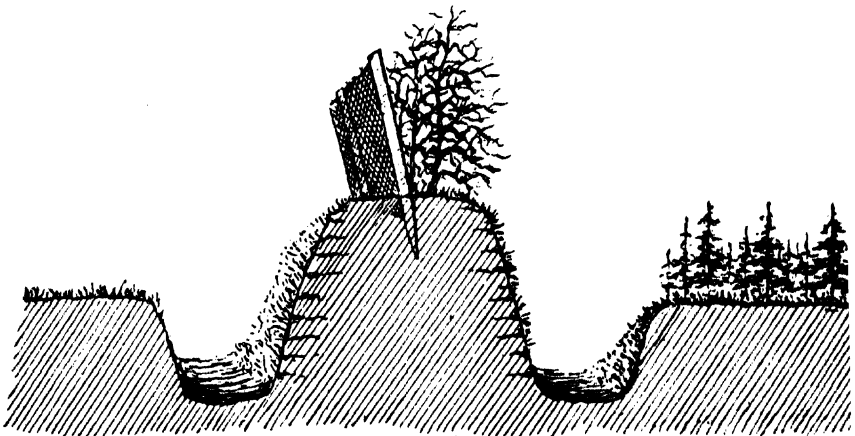


FIG. 1.

PROTECTION OF WOODLANDS IN IRELAND.



Fig. 3.—Beech Saplings damaged by Rabbits.



Fig. 4.—Stem of Beech, 40 years old, barked by Rabbits.

PROTECTION OF WOODLANDS IN IRELAND.

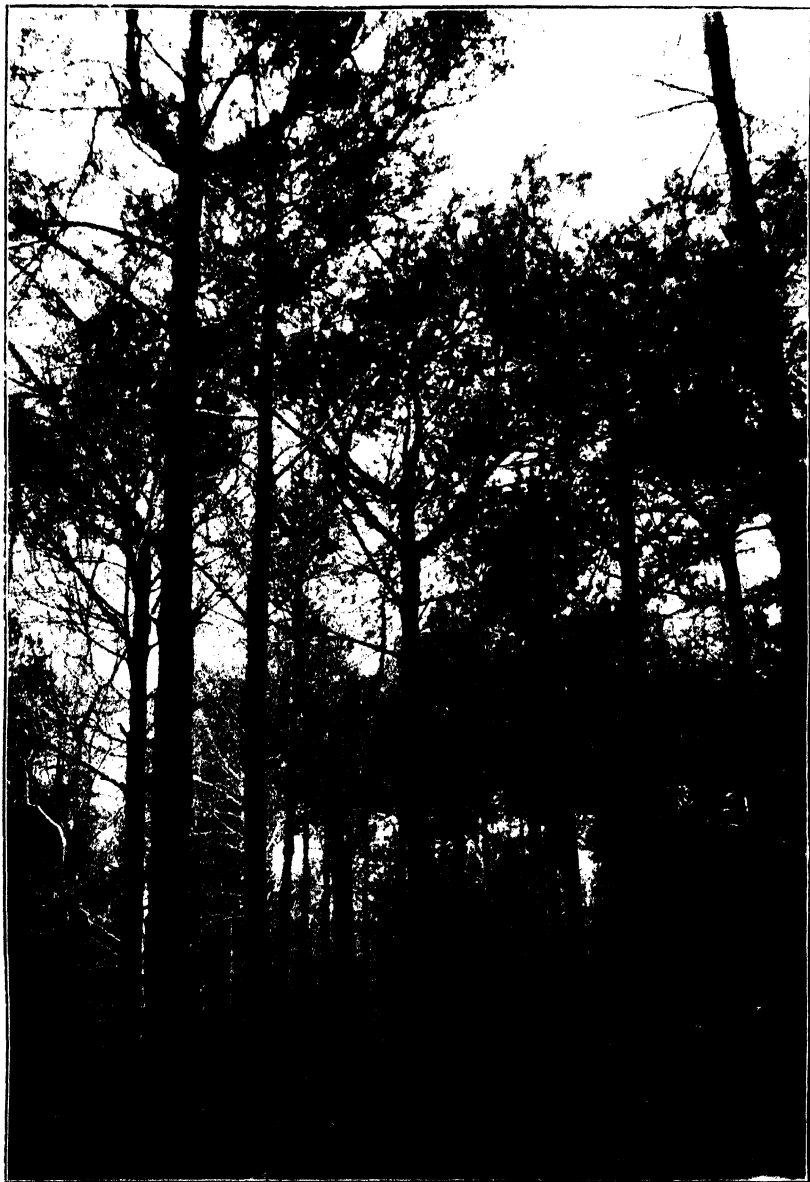


Fig. 5.—Scots Pine Wood, about 40 years old. Tops of
Trees all blown off after damage by Squirrels.

The usual dimensions of a ditch and bank are a depth and width of two feet respectively for the former, and a height of two feet above ground level for the latter. The bank should be at least two feet wide at the top, and the slope should vary with the character of the soil; the heavier the latter, the nearer should it approach the perpendicular. Banks higher than two feet above ground level, or four feet from base of ditch, are seldom necessary, as the greater the height the greater the liability to crumble under the influence of weather.

The hedge planted on the top of the bank may consist of white-thorn, beech, myrobella plum, and various other plants according to soil and situation. On strong soils, white-thorn is invariably the best, but on light land beech or myrobella plum grow faster and if properly managed make a good hedge. On poor, high-lying, land hedges of mountain pine, white American spruce, birch, etc., may be found useful.

Hedges require protecting for a few years with a low fence of posts and wire, and if rabbit netting is attached to the top wire, and let into the bank below, most animals likely to injure the plantation can be kept out. The general appearance of such a fence is shown in Fig. 1, and the total cost will vary from 2s. to 3s. per lineal yard. Where "dead" fences of iron, or posts and wire are preferred for protecting plantations, their efficiency usually depends upon the number, and rigidity or tightness of the bars or wires. For post and wire fences a period of eight or ten years usually terminates their existence unless repaired. The most easily erected fence, taking its efficiency into account, is one of good larch or oak posts and woven wire fencing sold in lengths ready for putting up. This fencing will keep back anything larger than a lamb or young pig, and is easily and quickly erected. For short lengths it is much better than wires, and the cost is very much the same as that of a six-wire fence, viz., about 9d. to 1s. per lineal yard.

The damage done to young plantations by ground game is one of the most serious obstacles in the way of cheap and successful planting. Whatever means may be taken to guard the trees against rabbits or hares, the cost of planting is increased from 20 per cent. to 30 per cent. thereby, while planting without protection leads to partial or entire failure in the great majority of cases. With very young plants, under two feet in height, the damage takes the form of eating off the tops and side shoots of the trees, and thus practically destroying them. With

**Protection
Against Rabbits
and Hares.**

older or larger plants, the barking of the stems partially or entirely for a distance of two feet from the ground is a common occurrence, in any case weakening the plant, if it does not destroy it. The species least likely to be attacked by rabbits are alder, birch, Corsican pine, and Sitka spruce. Other species are attacked more or less indiscriminately, according to the tastes of individual rabbits. Well established trees, or those raised from seed on the spot, are less liable to injury than recently planted trees, but in hard weather or snow, species of all kinds and every condition will be damaged if rabbits are numerous. Hares do most damage by eating off the tops, and are less troublesome than rabbits with trees of large size.

Three forms of protection against ground game are possible. The killing down of the animals by snaring and trapping is the best, and under certain circumstances the cheapest method. But unless the area so dealt with is large, a small proportion only of the rabbits which infest the ground can be caught, as they come in from adjoining ground at night, and do not lie long enough for trappers to reach them. With small and moderately-sized plantations, therefore, the ground must either be netted round, or trees must be planted three to four feet in height, and their stems individually protected. In the case of plantations of an acre or more in extent it is usually more economical to fence the ground round with netting, as not only are large trees expensive to purchase and more difficult to transplant successfully, but the cost of protecting individual trees is much greater per acre than the cost of netting.

Where rabbits are numerous the following precautions must be taken when erecting wire netting:—The netting itself should not be less than 42-48 inches in width and not more than 1½ inches mesh, or No. 18 gauge of wire. The bottom of the netting should be let into a trench from four to six inches below the surface, or, if the ground is too rocky for digging, the lower six inches should be laid flat on the ground and pegged or fastened down with stones, the edge of the netting pointing outwards. The upper edge should be fixed to a wire supported on 4½ feet posts placed twelve feet apart, and either leaning slightly outwards, or as shown in Fig. 2. On very uneven ground it is well to level the surface before putting in the netting, while drains which cross the line of fence must be specially filled in with flat stones, with spaces between to allow water to trickle through. Streams are usually provided with a hanging gate of spars, which will open outwards in times of flood, but rest against a wooden sill at the ordinary level of the water.

PROTECTION OF WOODLANDS IN IRELAND.



Fig. 6.—Tops of Larch Trees damaged by Squirrels in
Spring of 1908.

PROTECTION OF WOODLANDS IN IRELAND.

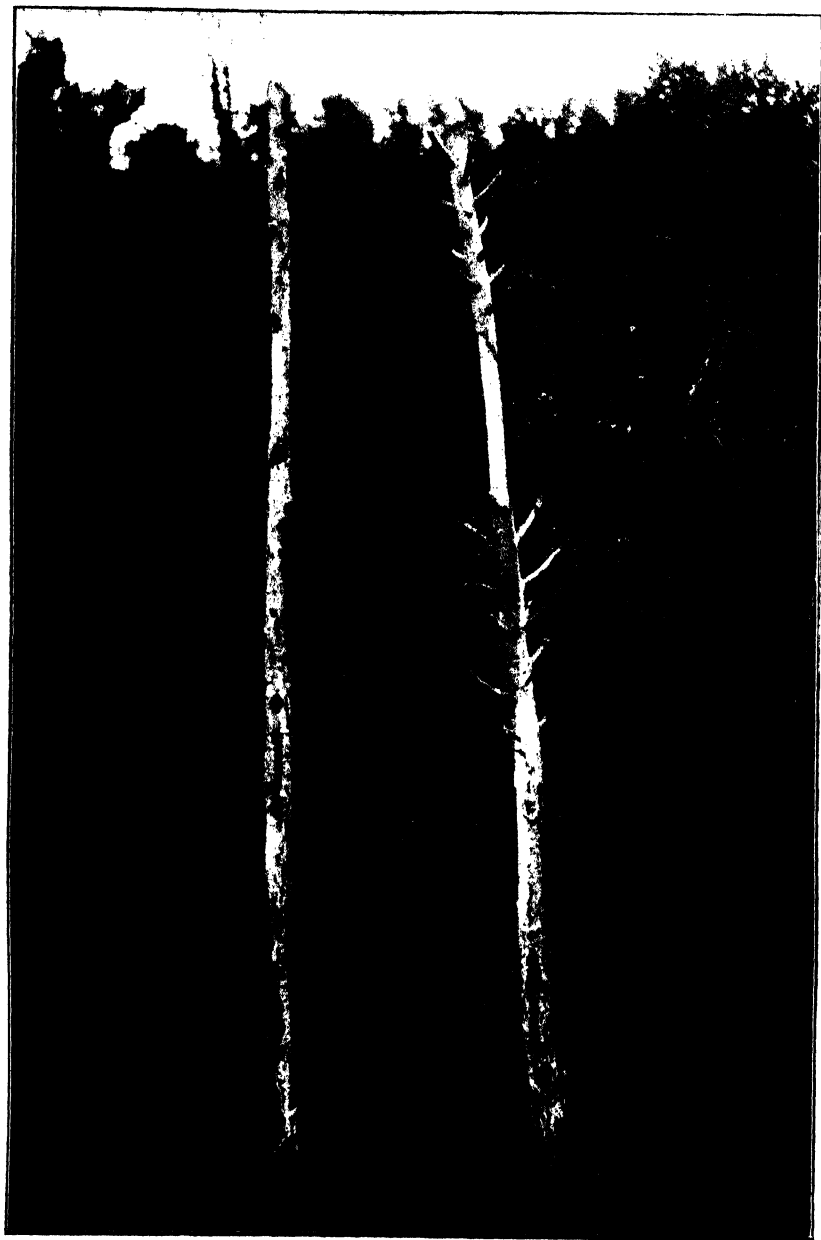


Fig. 7.—Larch Trees damaged by Squirrels.

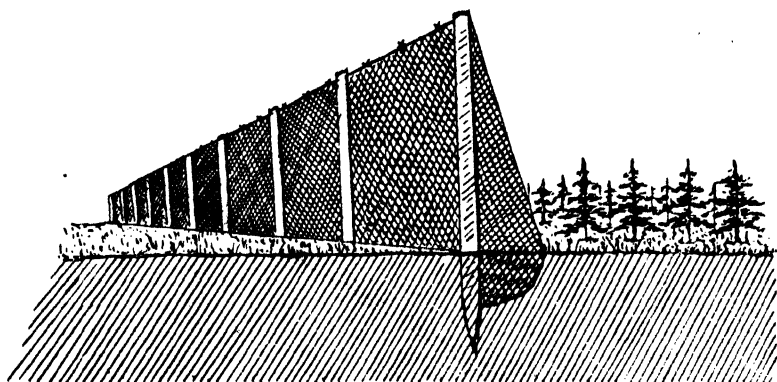


FIG. 2.

The methods of protecting individual trees vary from enclosing the stems in a small guard of wire netting to painting the stems with a mixture which is distasteful to rabbits, but harmless to the trees. The wire-netting guard requires about two square feet of old or large meshed netting. This is placed round the stems, and fastened together at the cut edges. The guard should be pegged to the ground to prevent it slipping up the stems.

A cheaper, but similar form of protection can be given by placing small dead spruce branches round the stems, and tying them round with fine wire. Birch twigs are also used for the same purpose, but are less durable.

Compositions for painting the stems of the trees can be purchased ready for use, but an equally effective mixture may be made up of Stockholm tar, cow or pig manure, fine coal ashes, soot, &c., mixing them together into a fresh mortar-like mass, and painting it on the stems to a height of two feet. This mixture must be applied as often as necessary during the first year after planting, and until the trees are thoroughly established.

Damage from ground game can be reduced to some extent by careful planting, and the strewing of ash, larch, and other branches amongst the trees during the winter. Autumn planting should also be avoided where the ground is not netted round, as the first winter after planting is the most critical period.

Although the squirrel is not indigenous to Ireland, and was scarcely seen in any district fifty years ago, it is now one of the worst plantation pests in the country. At the present time few woods are free from these creatures, and in coniferous woods of twenty to fifty years of age, considerable damage

**Protection
Against
Squirrels.**

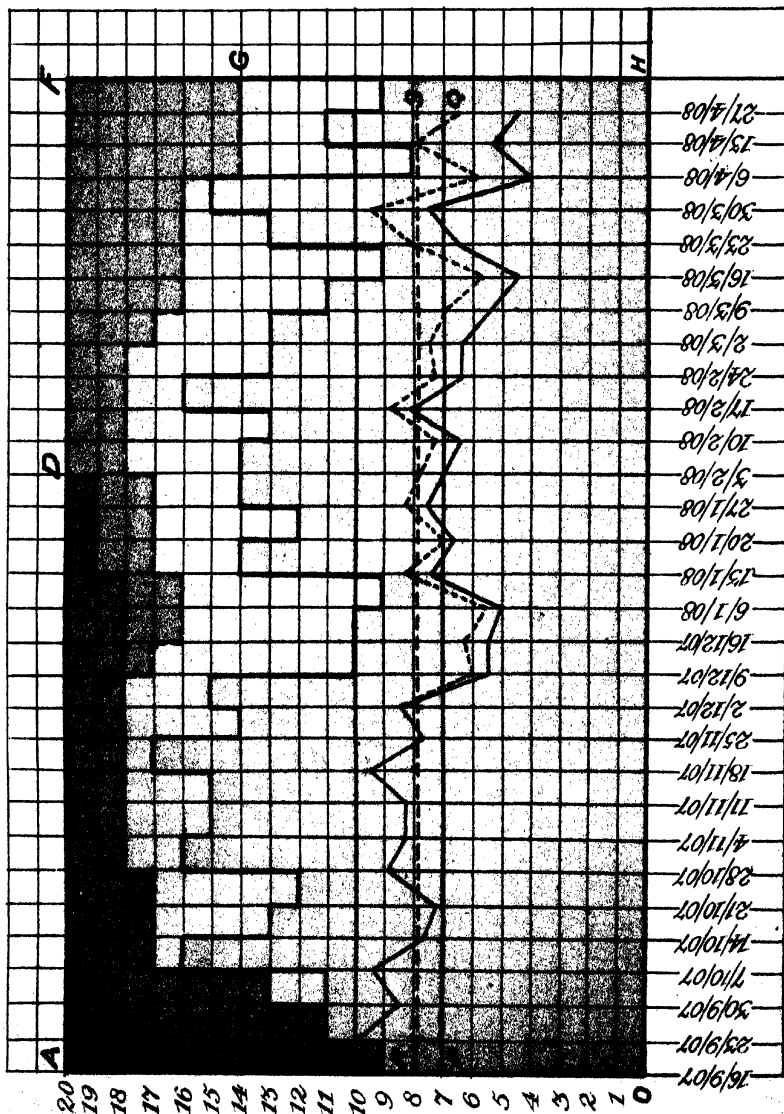
has been done, and the outlook for the future is still more serious. The species of trees most frequently attacked are pines and larch, but few species are immune where squirrels are numerous. The damage consists in the bark of the stem and leading branches being eaten or peeled off about twenty feet below the crown, with the result that the top of the tree dies, and after a few years is broken off by wind, as shown in Fig. 5. The injury is chiefly done in spring, when the bark easily separates from the wood. The bark so peeled off is used chiefly for food, but also for nest building.

Shooting and the destruction of the nests containing the young are the only means of destroying these animals and are absolutely necessary if coniferous woods are to be preserved in Ireland.

In many parts of England and Scotland considerable damage to young trees has been caused by field voles (*Microtus agrestis*). This vole does not appear to have caused much damage in Ireland so far. The water rat and the ordinary brown rat are injurious at times, but seldom do damage over a wide area. Other four-footed animals which injure trees at times are deer which have escaped from parks into large woods and have become wild to all intents and purposes.

A. C. FORBES.

COMMERCIAL ARITHMETIC



57 9.5%



56 9.3%



109 18.2%



378 63%



A METHOD OF KEEPING ATTENDANCE RECORDS

BY G. E. ARMSTRONG, M.Sc.,

Principal, Municipal Technical School, Londonderry.

At the summer meeting of the Association of Principals of Technical Institutes in Ireland, held at Newry, on 29th June, 1908, I had the honour of reading a paper on some difficulties of organisation, methods, and statistics in Evening Technical Schools. Some statistics relating more particularly to attendance in the various classes at the Londonderry Municipal Technical School for Session 1907-8 were used as illustrations, and it was the unanimous wish of the members present, that these should form the subject of a paper to be reproduced in the *Journal* of the Department of Agriculture and Technical Instruction for Ireland, on the ground that the methods employed would prove interesting to those engaged in educational work generally.

It is almost superfluous to emphasise the importance of school statistics. The duties of a Principal of a Technical School are many and of such a varied kind, that it becomes very difficult to keep in touch with the various sections of the school work, hence the importance of having statistics arranged in a convenient form, so as to give necessary information without waste of time.

The method employed in the Londonderry Municipal Technical School is, to represent the attendance of the various classes in a graphical form, as shown in the accompanying diagram, the explanation of the construction of which is as follows:—The vertical column of numbers on the extreme left of the diagram represents the number of students on the roll, and the horizontal row

gives the dates of the meetings of the class. On 16th September, 1907, there were nine students on the roll, which is indicated by the beginning of the upper-stepped curve; on 23rd September, 1907, the number on the roll was eleven; this is shown by the

Explanation of the Diagram.

ordinate corresponding to 23rd September, 1907, rising up to the abscissa through number eleven, and so on. The ordinate to the upper-stepped curve at any date, therefore, represents the number on the roll at that date. In exactly the same way, the lower-stepped curve indicates the number of students present. The intermediate dotted curve CG, together with the part BC of the upper-stepped

curve, represents the effective number of students on the roll, so that the intercepts between the upper-stepped curve and the dotted one, give the number of students who have left the class. As an example, consider the date 2nd March, 1908 :—There are twenty students on the roll, seventeen of these are in effective attendance, and of this number thirteen were present. The number of small squares between any two dates and the lower-stepped curve represents the number of attendances made between those dates. It will be observed that in this class the number of names on the roll after 27th January, 1908, was twenty, and that the class continued for thirty weeks, so that if all the students had joined the first meeting, the total number of attendances possible would be six hundred, which is represented by the area of the large rectangle AFHO, and this may be looked upon as representing an attendance efficiency of one hundred per cent. On this basis, the area ABCD, which is tinted blue in the diagram, represents the loss due to students joining late. The area CDFG, tinted red, represents the loss due to students leaving the class. The area tinted yellow represents the loss due to bad attendance, whilst the area of the remaining part of rectangle represents the actual attendance. The diagram consequently shows at a glance, and in a striking manner, the loss due to the various causes. On counting the number of squares it will be noticed that out of 600 possible attendance, 57 or 9·5 per cent. were lost through students joining late, 56 or 9·3 per cent. were lost through students leaving, and 109 or 18·2 per cent. were lost, due to bad attendance, making a total loss of 222 attendances or 37 per cent. The actual number of attendance made was 378 or 63 per cent.

The percentage efficiency is calculated for each class meeting on the total number on the roll, and also on the effective number, and these are represented by the diagonal curves shown. The lower curve with full line shows the percentage attendance on the total number on the roll, whilst the broken line shows the percentage attendance on the number in effective attendance. For the diagonal curves, the abscissa through ten represents 100 per cent.

In connection with these curves, is kept a list of the names of students who have left the various classes, date of leaving, and the cause of leaving so far as it can be ascertained. When the returns from the Department are received, the number of attendances claimed on is written at the side of the diagram for each class, and represented on the diagram by a dark tinted area.

It will thus be seen that for a moderately sized school, a whole session's attendance data can easily be represented on two imperial sheets of paper.

A summary of the information available from the diagram, then, is as follows:—

- (a) The number of students on the roll at any time during the session.
- (b) The number of students in effective attendance.
- (c) The percentage efficiency of the attendance for any class meeting, estimated on the total number of students on the roll, and on the number in effective attendance.
- (d) The average percentage attendance for the whole session, on both the total number of students on the roll indicated by the line PQ, and on those in effective attendance, indicated by the line RS.
- (e) The loss in attendance due to students joining late.
- (f) The loss in attendance due to students leaving the class before the end of the session.
- (g) The loss in attendance due to irregularity of attendance.
- (h) The actual number of attendances made by all students in the class.
- (i) The actual number of attendances claimed on, and the percentage of the total number.

A general survey of the whole series of diagrams shows that the loss due to late joining of the classes is much greater in the case of first year students and averages 10.6 per cent., the second and third year classes being 3.1 per cent. and 2.2 per cent. respectively. Now, with regard to the attendance of third year trade students, it might reasonably be expected that the regularity of attendance would be much better than in the case of first year students; the diagrams show that the average percentage losses in third year and first year classes were 24.8 per cent. and 18.8 per cent. respectively. On making enquiries as to the cause of this, I found that the best students in the Technical School were the best in the workshop also, and when an emergency rose in the works for extra skilled labour they were the first called upon to work overtime. If this is not satisfactory from the attendance point of view, it is satisfactory from the general view, because it is direct evidence that the results of the work of the School are being felt in the workshops.

The area tinted blue on the diagram represents the loss due to students joining late, and this is entirely out of the control of the teacher of the class, but it will be at once admitted that he is largely responsible for the remaining loss of attendance in most cases. In estimating the percentage attendance efficiency, so far as the teacher is concerned, the loss due to late

joining is deducted from the total number of possible attendances, and the remainder, 543 in this case, is looked upon as 100 per cent. The percentage attendance efficiency, then, works out to 70 per cent. This calculation is made in all cases, and filled in as shown. A curve is then drawn showing the attendance efficiency of each class; an examination of this curve gives at once the position of a class in the School, and its actual attendance efficiency.

In addition to the class attendance records previously referred to, a record is kept of each individual student's attendances, home-work marks, etc. The following is a copy of the form used:—

MUNICIPAL TECHNICAL SCHOOL, LONDONDERRY.

STUDENTS' RECORD FORM,

Surname, _____ Christian Name, _____ Date of Entry, _____

SESSION _____

Subjects of Study	ATTENDANCE		HOMEWORK MARKS		Examination Successes	Remarks
	Possible	Actual	Possible	Actual		

SESSION _____

--	--	--	--	--	--	--

NOTE.—The actual size of the form is $8\frac{1}{4}$ inches wide by 5 inches deep, and both sides are used.

From this it will be observed that spaces are left for the date of entry to School, subjects of study, possible and actual number of attendances in each subject, home-work marks, examination successes, and any other remarks which may be considered necessary.

Both sides of the form are utilized, and afford sufficient space for a five year's record. The cards **Students' Record Form.** are then arranged in alphabetical order, with numbered index cards, and placed in a suitably sized box. These cards are made of thin cardboard, and measure eight and a-quarter inches wide by five inches deep; and a box nine inches long holds about four hundred cards, conveniently arranged for working use.

It may be urged that the compiling of these records absorbs a considerable time. It must be admitted that this is so, but not so much as would appear at first sight. At the beginning of the session a card is made out for each new student, and placed in its proper position amongst the previous session's cards. At the end of the session when the registers are returned to the office, the attendance returns and home-work marks are then added to each card, the attendances serving, at the same time, for making out the claim sheets. Even if the time absorbed was considerably more than it actually is, ample compensation is obtained for the following reasons:—

- (a) Because definite information of a student's school career is available at a moment's notice.
- (b) When students are aware that a record is being kept of their work, the mere knowledge of the fact acts as a stimulant.
- (c) The information on the cards is very useful when arranging a student's course at the beginning of the session; and
- (d) When a testimonial is required by a student it is much more satisfactory to be able to make a definite statement as to the student's school career; and,

Finally, when enquiries are made by employers, parents or guardians, a feeling of confidence in the School and its work is created when a definite statement as to a student's career can be easily produced.

THE MARKETING OF IRISH PRODUCE IN 1908.

The greatly increased number of inquiries received by the Department in 1908 from Irish manufacturers, dealers and shippers for the names of buyers in Great Britain, and from buyers in Great Britain for the names of shippers in Ireland, may be taken as an indication of the most favourable position held by Irish Produce in cross-channel markets.

This more favourable position is due to the following clauses :—

- (1) The general improvement in Irish Produce resulting from better methods of production ;
- (2) The greater attention paid by Irish shippers to grading, packing, and handling their produce ;
- (3) The action of the Department in instituting prosecutions for frauds in Great Britain which has directed public attention to Irish Produce and which, by preventing the sale of other products as Irish, has increased the demand for genuine Irish goods ;
- (4) The exhibits of Irish products at nineteen Exhibitions held at various centres in Great Britain. These Exhibitions have been visited by many thousands of the general public, and the Newspaper Press notices of the exhibits have probably been read by a greater number of the public who did not attend the Exhibitions. The advertisement which Irish Produce has received by this means must have been very considerable.

The depression in trade during 1908 has had the effect of making competition more strenuous, the buyer more exacting, and has supplied a potent reason for the Irish shipper to perfect his methods of handling his goods.

The improved position obtained in British markets by Irish exporters during recent years can only be retained by giving continuous care and attention to those details of marketing which in the aggregate produce success. Any slackening of attention in handling goods, which are in competition with those of other countries whose producers and shippers are active, eager, and steadily endeavouring to improve their methods, must result in a decreased demand or a loss of market. It is, therefore, of the greatest importance, while recognising the advances made, to face those difficul-

ties that remain to be overcome. The remarks which follow on the marketing of Irish Eggs, Poultry and Fruit during 1908 will, therefore deal with questions arising from complaints received, and the faults of handling, grading and packing that have been noted; and as to the latter some remedies will be suggested.

Eggs.

There is still great need for improvement in the matter of cleanliness. A number of people think that in such a

Cleanliness. damp climate there must always be a large number of eggs soiled or dirty. Even if this were true, which is not admitted, the difficulty has been almost entirely overcome in some districts, notably that of Portadown, where practically all the eggs offered for sale in the local market are clean.

As the cause of eggs being dirty rests primarily with the producer, it is suggested that he should pay careful attention to the following points:—

1. To provide clean hay, straw or other suitable material in the nests, and to renew the material frequently and whenever it becomes wet or soiled.
2. To use portable houses if possible. The adoption of this system, under which houses should be constantly moved to fresh ground, is strongly urged.
3. To collect eggs at least once daily, in the forenoon, and, if possible, again at dusk; and when the eggs are collected, *at once* to remove any adhering dirt, using a dry cloth for the purpose, or, if necessary, a damp cloth, but in using a damp cloth to avoid wetting the shell more than is necessary.

It is often suggested that the remedy for dirty eggs is to wash them, but no system of washing hen eggs can be said to be entirely satisfactory. It may frequently be necessary in the case of duck eggs but the practical way to face the difficulty is by prevention rather than cure. The whole question of dirty eggs is one of very grave importance to the Irish shipper. He finds that eggs from other countries with which he has to compete are year by year coming in cleaner, and that the standard of cleanliness of eggs is being raised in Great Britain. If he desires to get the best price and to maintain or improve his position, he must sell clean eggs. All dirty eggs should be packed together, but whether this is done or not,

it is obvious that the greater the proportion of dirty eggs he gets, the greater will be his difficulty in marketing to advantage.

The following circular has been issued this year:—

EGG! EGGS! EGGS!

NOTICE TO FARMERS AND OTHERS.

Owing to the keen competition of Foreign eggs, which are arriving in increasing quantities every year, in perfectly clean and fresh condition, Irish eggs are being displaced from the leading position they have hitherto occupied in the English and Scottish markets.

In order, therefore, to protect and foster the Irish Egg Trade, the undersigned dealers are compelled to give notice that on and after 1st *February* next, THEY WILL REFUSE TO PURCHASE SOILED OR DIRTY EGGS, EITHER HEN'S OR DUCK'S.

IMPORTANT:—The Dirt should be wiped off the Eggs with a Damp Cloth immediately they are collected from the Nests, and then carefully dried.

(Here follow Names of Egg Merchants).

An arrangement similar to that referred to in the circular should be made by buyers in every locality whereby it would be agreed that on and after a certain date the price quoted would be for clean eggs only, and that dirty eggs would only be taken at a less price. It is certain that a great improvement in regard to the cleanliness of eggs must be made; *and that so long as producers are paid the same price for clean as for dirty eggs, no improvement in cleanliness is probable.*

During 1908 the Department carried out a series of experiments with cases of different types, in order to find out

Egg Cases. what types of cases are the most suitable for meeting the requirements of Irish shippers and British buyers and best adapted for carrying eggs with a minimum of breakage when carefully packed and handled. These tests have not yet been concluded, but so far the evidence is conclusive that the long 12 hhd. continental type of case, divisible into two 6 hhd. cases, and the 3 hhd. case, have given by far the best results as to absence of breakage, and that of all those experimented with, the 6 hhd. case suffers most from breakage. The type of 6 hhd. case used throughout was what is known as the flat case with four layers of eggs; the deep 6 hhd. case, with six layers of eggs, is often too slightly made, is

not rigid, and, therefore, being capable of compression cornerwise, is responsible for a great deal of breakage. The evidence the Department have received from carrying companies and other sources is to the effect, that breakages are generally greater in the deep 6 hhd. cases than in the flat 6 hhd. case. The survival of the deep case is probably in a large measure due to its compactness which permits of its being conveniently displayed in retailers' shops. It is likely that the 3 hhd. case will displace the deep 6 hhd., the former being more compact, and carrying eggs with less breakage.

It appears that the 3 hhd. case has increased in favour with shippers in 1908. This case possesses several advantages; it suits the retail trade at all seasons of the year; it is not too large to be displayed in the retailer's shop; the shipper gets, therefore, the manifest advantage of having his eggs shown in the original package, on which, if he is up to date in his methods, his particular *brand* (not his *name*) should be plainly marked. The public can thus recognise the brand, and if the eggs are what they should be, the shipper will gain in consequence. This case is handy to move, one man can easily carry it, hence breakages are prevented both in transit and when in the hands of the wholesale and retail buyers. The cost of packing in this case is rather more than when the larger sizes are used, but it is probable that if it comes into more general use it will be produced more cheaply, especially as being made of short lengths of timber, native wood may be used in its construction throughout. This case, made as a double 3 hhd. case, has proved most satisfactory.

Numerous complaints have been received of cases being made of unseasoned or wet wood. This is a very common fault and a very serious one. Egg cases should be made of seasoned wood, or else the cases should be thoroughly seasoned after manufacture and before they are used. All cases, after they have been made up, should be stored under cover in a dry, well ventilated place.

In addition to the very serious and common fault of using cases made of unseasoned wood, eggs are seriously damaged by the following common and objectionable practices, viz. :—

- (1) Exposing empty cases to rain, during transit in carts and when lying in yards, pending use.
- (2) Packing eggs in the open during rain.
- (3) Exposing packed cases to rain, especially while they are being carted to stations.

This exposure to rain is the cause of many eggs being spoiled, or much depreciated in value. It is obvious that egg cases, whether

empty or full, should always be protected from wet. Damp wood damps the packing material, which in turn damages the eggs in contact with it.

The great cause of complaint is the use by shippers of damp or wet straw. Damp straw causes eggs to arrive in bad condition, smelling musty, and depreciated in value. The dampness of straw is often due to the fact that the straw used has never been properly

Packing Material. dried or that it has become damp in store; but it is also very often wholly or partly due to the following causes:—

- (1) Use of cases made of unseasoned wood, the straw in which, if drier than the case, will absorb moisture therefrom.
- (2) Exposing cases to wet after they have been packed.
- (3) Carting uncovered empty cases in rain, and packing in them before they are thoroughly dry.
- (4) Packing in the open in wet weather.

The importance of this phase of the question of packing eggs cannot be more strikingly exemplified than by quoting one of the largest buyers—if not the largest buyer in Great Britain—who recently wrote stating that “if the use of damp or wet straw were stopped, nine-tenths of the complaints concerning Irish eggs would cease.”

Shippers are most strongly urged—

1. To use dry oat straw; or
2. Dry rolled wheat straw; or, failing either of these,
3. Non-resinous wood-wool.

It is also absolutely essential that the egg cases should be thoroughly seasoned and perfectly dry when used. It cannot be too strongly emphasised, again and again, that eggs should always be packed in a dry place. As throughout Ireland rain falls on more than two hundred days per annum, it follows that probably on half the market days packing at markets under dry conditions in the open street is impossible. Shippers should, therefore, always secure covered accommodation for packing; and they should make it a rule to provide tarpaulin cart covers for the protection of empty and filled egg cases; this is especially necessary when packed cases are being carted to railway stations. They should also insist on egg cases, whether empty or filled, being protected from wet while lying on railway companies' premises.

While there is a marked improvement as regards grading, much yet remains to be accomplished. There appears

Grading. to be a decided disinclination on the part of Irish shippers to sell eggs graded to weight. This system is now practically universal with all continental eggs, and, although a large quantity of Irish eggs are sold to British buyers who do not stipulate for them being thus graded, nevertheless a large number do persistently ask for it. If selling by guaranteed weight per hhd. is adopted, it must be fairly and consistently carried out. There would appear to be an impression among Irish shippers who claim to grade to weight that if a case of eggs is sold as weighing 17 lbs. per hhd., it is permissible to put in some eggs weighing 18 lbs. and others weighing 15 lbs. per hhd. This idea of averaging the weight to include two such extreme sizes is entirely wrong. It must be obvious that the shopkeeper who ultimately has to sell these eggs cannot obtain the same price for 15 lb. as for 18 lb. eggs, and hence he may be a loser in retailing them. Further, the packing of eggs, which vary so much in size as from 18 lbs. to 15 lbs. per hhd. in the same layer, is a fruitful cause of breakage. Irish eggs sold as new-laid, and intended to be re-sold as new-laid in Great Britain, are not usually graded to strict weights.

It is recommended that when the supply of eggs permits of doing so, Irish eggs should be graded to weights of 15, 16, 17, and 18 lbs. per hhd., and that the cases should be branded accordingly. The use of the 3 hhd. cases already referred to, materially helps in carrying out this system.

In those districts in Ireland—and this applies more particularly to the poorer western districts—where such strict grading cannot be carried out, owing to the very limited supply of eggs of 16 lbs. and over per hhd., it is suggested that eggs should be graded as follows:—

“Extra selected,” being eggs $15\frac{1}{2}$ lbs. or over, per hhd.

“Selected,” being eggs averaging 15 lbs. ($14\frac{1}{2}$ to $15\frac{1}{2}$ lbs.) per hhd.

“Smalls,” being eggs under $14\frac{1}{2}$ lbs. per hhd.

All the cases to be branded accordingly.

Packing by hand, instead of by skip or tray, has increased in favour with shippers, but it is by no means general.

Packing by Hand. One of the largest shippers of Irish eggs has now adopted it for all he packs. In this case women are employed to do the work with decided success.

It is believed that women exercise more care than men in grading, in the casting of chipped and dirty eggs, and in giving a smarter and more finished appearance to the packed eggs.

Greater care should be taken to see that each layer of eggs is protected by a pad of straw from contact with the sides and ends of the case; and especial care should be exercised to pack the corners sufficiently with straw. It has been observed when examining cases that it is a very common fault to leave an unfilled space at each corner; hence, if the case is up-ended even a little, these spaces permit of an amount of movement which results in considerable breakage.

Finishing Off.

The practice of holding back eggs would be greatly lessened if all eggs bought by shippers on a rising market were tested by the light test. This method of testing should be universally adopted; by its means the buyer would ascertain by which producers or higgler stale eggs were supplied, and should decline to purchase from those who were habitually guilty of this practice. The real solution of the question, however, so far as Ireland is concerned, rests with the producer, the higgler and the shipper; the former must market his eggs while fresh, and the two latter must never hold over. Apparently the fault at present lies usually with the producer and the higgler, but the shipper is not altogether free from blame. It is certain that the practice will have to be discontinued, as otherwise the best class of British buyers will decline to purchase Irish eggs on a rising market.

Another practice more easily detected by the expert shipper, and, therefore, more foolish from the producers' point of view, is that of selling preserved eggs as fresh. Several instances are known of good buyers ceasing altogether from buying eggs in certain markets entirely on account of this practice, which cannot be too strongly condemned.

The Irish egg trade has made remarkable progress in recent years.

This progress has been obtained despite the existence of the faults described above. It must not, however, be forgotten that Irish shippers have to compete with continental competitors who are working to secure more and more of the British market, and who are ever improving their methods and striving to meet the wishes of the trade. If the present position of the Irish trade is to be maintained, it can only be by following the methods recommended in this article, and by constantly striving to improve. Ireland possesses an undoubted advantage over most of her competitors in her nearness to the market; if combined with this, all those concerned work together to produce and

The Urgent Need of Improvement.

supply a cleaner, better graded, better packed and fresher egg, the amount of trade now done could easily be greatly increased and the price of Irish eggs could be materially enhanced.

POULTRY.

One of the Department's Inspectors was standing in a well-known salesman's stall in Leadenhall Market, London, during the week before last Christmas, when a buyer came up and asked for good chickens; he was shown three small cases holding one dozen each, and was quoted 2s. 3d., 2s. 6d., and 2s. 9d. per bird. The salesman was bidden 2s. 4d. all round, but stood out for his price and ultimately obtained it. The birds came from Ireland, of which fact the buyer was duly informed. They were graded to within half-a-pound in the weight of the largest and smallest in the case, the birds had been handled perfectly, there was clean, dry, bright straw in the bottom and on the top of the case, with good, clean, grease proof paper between it and the birds. The weights averaged 3 lbs., $3\frac{1}{4}$ lbs., or $3\frac{1}{2}$ lbs. per bird in the respective cases. The cases and contents were clean, tidy, and looked very businesslike. The salesman got his price, the producer would be certain to be satisfied, the buyer got what he wanted, paid the full market value, and Irish produce received a good advertisement.

The next day the same Inspector was in another market, and on entering at the main entrance he stood at the edge of a small crowd and listened to an auctioneer selling Irish chickens. The buyers were evidently not of the best buying class, and the price at which the birds were selling was by no means a high one. At the back of the auctioneer were ten or more railway skips apparently just delivered by the railway carman, all full of dead chickens. Some assistants, who were working at high pressure, were opening these skips and examining the contents. The first lot sold after the Inspector arrived realised 16s. per dozen; the buyer, with the aid of two assistants, immediately cleared the birds he had bought, and then the auctioneer's assistants threw out, counting as they proceeded, the contents of the next skip on to some dirty straw on the ground; the bidding proceeded, the next lot fetching 16s. 6d. per dozen. On examination the birds were found to be small sized, very badly plucked, none too clean, ungraded, and a discredit to the shipper and the country of origin. Other salesmen in the same market were selling similar birds, either by auction or privately, at prices ranging from 16s. to 24s. per dozen.

There can be no doubt whatever that the *result to be desired* is that obtained in the first instance given above. Many of the poor, bad quality birds referred to in the second instance should not have been killed, they were so obviously unsuitable. This experience is quoted, as it sums up in concrete cases *what is essential*, in shipping good quality poultry, giving every care and attention to quality, packing and handling; and shows the disadvantages of an absence of these essentials.

Some of the largest Irish shippers have now adopted boxes which hold one dozen chickens. Some shippers use boxes of three sizes to suit different sized birds. It

Chickens.

is suggested that, when chickens are packed in these cases, light blue paper should be used instead of the dead, dull, white paper generally adopted; the blue colour "throws up" the contents of the case in much more striking manner. Some shippers dust the birds with flour, particularly in the case of crammed chickens. London salesmen report that, while this custom is successfully practised by Sussex crammers, it is not suited to the different conditions of the Irish bird, whether fed or crammed. In the former case the birds arrive dry; in the latter, whether owing to the damper atmospheric conditions, or the longer transit, the birds arrive in a less dry condition, the appearance is not so good, and the flour becomes soured, especially if the birds are not immediately sold. The railway hamper, or skip, is the package most frequently used for the transit of Irish dead poultry. While this is a convenient and inexpensive method of shipping, it is by no means the best. The hamper when quite new is free from dirt and odours, and is not unsightly, but after use it loses these characteristics. Many railway hampers have been opened in the presence of Inspectors; in some cases the contents appeared to have been fairly well packed and were in pretty good order, but in others, the birds were in a confused jumble. In some cases the birds had been wrapped in paper, which had become wet and sticky and adhered to them. Another form of package still used is the Sussex Pad for crammed chickens. This package is constructed to carry two dozen birds in two layers, and being returnable, is strongly made. For carrying birds from Sussex to the London markets it may be quite suitable; but, for forwarding from Ireland, it is not so satisfactory, because it must be handled at least four times by railway and steamship companies as compared with twice from Sussex to London, with the result that there is a tendency

for the birds to become bunched at one end of the pad, and, therefore, to lose considerably in appearance, finish and condition, and consequently in value.

One great fault about the marketing of geese is that the birds are not "finished." A lot of down and feathers are

Geese. usually left on; very much more attention is required in this respect.

There has been a marked improvement in the grading, packing, and handling of Irish turkeys for British markets, and

Turkeys. the trade and the public are becoming more alive to the very high quality of Irish turkeys. The birds are now better graded, plucked cleaner, better turned out, and smarter in appearance than formerly.

The following notes have been made by one of the Department's Inspectors, who visited a number of the principal British markets shortly before last Christmas, and who had the opportunity of examining packages of Irish turkeys when opened:—

Birds in crates similar to those recommended in the Department's *Journal* for April, 1907, Vol. VII., No. 3, carried best. Some shippers had used straw as packing, others paper; others, by leaving a number of the wing feathers, had endeavoured to avoid the use of paper or straw. Of the three types of packing, straw was considered to have given the best result. In one consignment of crates, holding 12 cocks each, finely drawn straw had been placed across the legs of the birds, and lengthwise between each bird. The effect of this was that the birds had remained in position as packed in the crate; they were quite dry, the straw having apparently absorbed any moisture present, and, as the buyer said, "they came out as clean and tidy as they went in." In one instance the birds had been packed in a common cheap kind of paper, which had absorbed some moisture; this necessitated the birds being picked over, to clear off the paper. Buyers objected to the birds when long wing feathers were left on as this entailed a certain amount of work on the poulterer before he exhibited them in his shop, and as this work had to be done when there was a great pressure of other work, the practice found no favour. The conclusions arrived at were that paper, if of good quality, formed a good covering for birds sent from the drier districts in Ireland, or forwarded in dry weather, but that, when the atmosphere was damp and muggy, straw formed the best packing material.

Some shippers had adopted a case similar to or identical with the 6 hhd. flat egg case. This case is not suited for the transit of turkeys; there is not enough ventilation; open crates only should be used, not closed cases; the latter cause the birds to "sweat"; they thus lose in colour and appearance, and have not a "bright" fresh look when opened.

The general fault to be found with the birds packed in skips was that too many were put into each skip, and that too little straw (in some cases there was none), was put between the layers and between the birds. In one skip so many birds had been jammed in, that when opened they were "steaming" and malodorous.

It appears that very large cock birds have not been so much in demand as formerly, and that the demand is increasing for medium-sized cocks and large hens.

One salesman in a large market, where, until recent years, Irish turkeys were not so freely sold as in 1908, paid a compliment to Irish produce which should be noted. He issued a circular to the trade calling attention to the high quality of the Irish, placed in grades, at the head of the list of his poultry on offer, and quoted the highest price for them. If the attention of Irish shippers is directed to improving their grading, packing, and handling, this example will surely be followed by other salesmen in markets where hitherto Irish turkeys have not held the premier position.

FRUIT.

Owing to the depression in trade in those markets on the other side where Irish apples are usually sold, and the

Apples. low prices realised for the crop in England, the export of the Irish fruit flagged considerably. During the middle portion of the season Irish apples sold at low prices, and even then there was not a too ready market.

Apples were exhibited at the autumn shows at which the Department had exhibits, at Cardiff, London, and Cork. The apples exhibited were packed in the packages recommended by the Department, and graded as recommended in leaflet No. 57. The exhibits at each show were well packed, looked well, and sold at satisfactory prices. There appears to be an increasing demand for high-class well-graded apples in cases of various sizes to suit buyers' requirements. The use of Department's standard packages, as given in leaflet No. 57,

enables the buyer to know the exact size of case he will get when ordering, and if the shipper will generally carry out the excellent plan as adopted by one shipper of putting a card in each case as follows:—

SORT—Bramley Seedling.

QUANTITY—One Bushel.

GRADE—Firsts.

The contents of this box is guaranteed by the shipper to be of the same even quality and size throughout.

confidence will be established between the producer and the consumer.

The use of the second-hand American barrel by Irish growers for marketing apples is now almost general. The apples are roughly placed in the barrels; they are piled above the top of the barrel, and then covered with a coil of hay, which is firmly secured by cords. This method of packing is easy and economical. In its results the system is not satisfactory; the apples, not being tightly packed, move about in the barrel, and are bruised in transit. By far the best method is to pack the apples in the barrel, beginning to pack at the end which will form the top of the barrel, and filling to one to two inches above the rim, according to the hardness of the fruit; then put the head on the top of the fruit, and, by the gentle application of pressure by weight, lever, or screw, press the fruit down into the barrel so that the bottom of the barrel can be secured. The heads should not be fitted on until the barrels are to be sent off; this will allow of inspection after packing.

Pack apples of special quality and value in standard boxes, and use barrels for good sound fruit.

If apples were graded in the orchard when picked, the smalls and seconds sold at once, and the best graded and packed in standard packages, there would be very much less bruising in handling than when they are stored on floors or temporarily in barrels or boxes as at present. The packed fruit might be stored, and not having been bruised, could be kept in sound condition, and held over to be marketed at the best time.

A serious cause of complaint during last season was the addition of water to the blackberry fruit. It is a not un-

Blackberries. common practice for the pickers to add water to the fruit before delivering it to the buyer in Ireland. This is a fraudulent practice which deteriorates the quality

of the fruit, and has done much to injure the reputation of Irish blackberries on British markets, and buyers should decline to purchase watered fruit.

There was a large demand from Great Britain for supplies of sloes, and for outlets from districts in which they grow in Ireland. The demand for this fruit is apparently on the increase. Unfortunately, the sloe is not in regular supply; in some years very few are to be found, and hence the exceptional demand during 1908 was probably due to several short seasons. When the crop of this fruit promises to be large, the opportunity should be embraced of arranging beforehand for the fruit to be picked.

The crop of bilberries was a good one, the quality above the average, the demand good, and it is believed that a large quantity was shipped.

The crop of crab apples was about an average one. The Department received a large number of inquiries for names of buyers, and it is understood that a quantity of fruit was shipped in consequence.

The crop of cider fruit was not up to that in 1906. The various cider-making firms, being sold out of stock, bought all that was offered, and, in consequence, growers were enabled to find a ready market.

TOBACCO GROWING IN IRELAND.

In the issue of the Journal for January (Vol. IX., No. 2, p. 223) an article appeared giving a full account of experiments in Tobacco Growing carried out in Ireland, with a detailed statement of the results obtained, and some recommendations regarding the cultivation and Manufacture of Tobacco. It has been decided to supplement the article by issuing a series of leaflets relating to the subject as under:—

- A. *Introductory,*
- B. *Suitable Soils,*
- C. *Curing Barns,*
- D. *Suitable Varieties,*
- E. *Seed Beds,*
- F. *Manures,*
- G. *Transplanting,*
- H. *Cultivation,*
- I. *Harvesting and Curing,*
- J. *Grading, Packing, and*
Maturing,
- K. *Marketing,*

The first five leaflets of this series, Leaflets A to E inclusive, appear below; the others will be published later on.

LEAFLET A.—INTRODUCTORY.

The first series of small experiments in the growing of tobacco which was carried out in Ireland previous to the year 1904 did not prove conclusively what type of tobacco was best suited to Irish conditions or what methods of culture were necessary. Accordingly further experiments have been undertaken with a view to solving these problems.

The second series was commenced in the year 1904 and has been conducted on a commercial scale in order to determine the possibilities of tobacco as a paying crop for this country. The area under tobacco has been gradually increased from 20 to 100 statute acres and the number of growers from one to twenty-three, residing in seven counties.

Tobacco is grown the world over, but, being extremely sensitive to every influence, the product of each region has its own peculiar characteristics. The trade recognises this by dividing cured tobaccos into classes, according to their use; into types, according to their origin or peculiar character; and into grades, according to quality. Thus, there are tobaccos of the cigarette class derived from Turkish and Virginia types, which may be divided into numerous grades. On the other hand, tobacco of the Burley type may comprise several classes—as chewing, pipe cutters, roll wrappers, and cigarette cutters. Obviously, therefore, the first aim was to determine the class and type of tobacco best adapted to Irish conditions, having regard to soil, climate, and the economic conditions of production and sale. This has been too complex to determine in the few seasons that have elapsed, so that tobacco growing in Ireland is yet in a distinctly experimental stage.

Before tobacco can be regarded as a commercial crop by the Irish farmer, the following conditions must be fulfilled:—

1. Probably one class and one type of tobacco distinctly suited to the country must be found.
2. The requirements of the class and type selected must be clearly understood, and a system of production evolved to suit the peculiar conditions.
3. A reliable market and a fair profit must be assured.

These are the points which the experimental growers are trying to ascertain under the guidance of the Department of Agriculture.

As regards the first point, the following table shows the present stage of the experiments;—

CLASSES and TYPES OF TOBACCO Recommended for Further Trial.

Class.	Type.	Remarks.
1. Roll and Plug	Virginia Pryors ..	In greatest demand. The most easily grown and sold.
2. Brown Roll Wrapper	Kentucky Burleys	A limited demand. Requires more care to produce the standard quality.
3. Bright Cutter	do.	do.
4. Cigarette	Turkish (varieties)	Large demand. Very tedious to produce. Requires a standard of quality very difficult to produce in Ireland.
	Virginia Pryors ..	Large demand. Adapted to light soils and dry climates; therefore very difficult to produce in Ireland.
	Kentucky Burleys	Market undeveloped. A new tobacco peculiarly suited to Irish conditions.
5. Cigar Wrapper ..	Sumatra ..	Limited demand in United Kingdom. Most expensive to produce requiring great care and skill. Standard of quality very high, but in many respects is adapted to Irish conditions.

In each case either the class or type offers certain advantages which render it inadvisable to discard it until the relative cost of production and market value have been more definitely determined by methods of culture best suited to the new environment.

Already considerable progress has been made in lowering the cost of production. Sufficient quantities of Classes 1, 2 and 3 have been sold to fairly test their market value, but the quantities of Classes 4 and 5 have been too small for this purpose, though some idea of their value has been obtained.

The following are the estimated average costs of production per statute acre of the types on trial. In addition, the estimated average

maximum yield per acre and the consequent cost per pound is given, along with the average selling price per pound. The market values of Irish-grown Turkish and Sumatra tobaccos have not been sufficiently ascertained, but what is considered a fair estimate is here given.

ESTIMATED COST OF PRODUCTION per STATUTE ACRE, based on RESULTS hitherto obtained in Ireland.

	CLASS.				
	Plug and Roll.	Roll Wrapper and Bright Cutter.	Cigarette	Cigar Wrapper.	Cigarette.
	TYPE.				
	Prior.	Burley.	Burley.	Sumatra.	Turkish.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Seed Beds ..	1 10 0	2 0 0	2 0 0	3 0 0	8 0 0
Farmyard Manure	3 15 0	3 15 0	3 15 0	3 15 0	2 10 0
Spreading Manure	1 5 0	1 5 0	1 5 0	1 5 0	1 17 6
Preparation of Land	2 0 0	2 0 0	2 0 0	2 3 0	1 15 0
Artificial Manure	2 10 0	2 10 0	2 10 0	2 10 0	—
Planting ..	0 15 0	0 16 0	0 16 0	1 10 0	4 0 0
Cultivation ..	1 8 0	1 8 0	1 8 0	2 2 0	3 10 0
Suckering & Topping	0 10 0	0 10 0	0 10 0	0 5 0	1 0 0
Harvesting ..	1 16 0	2 5 0	8 0 0	15 0 0	25 0 0
Curing ..	3 3 0	4 0 0	6 0 0	2 0 0	1 7 6
Grading ..	2 0 0	3 0 0	3 0 0	6 0 0	2 0 0
Packing ..	0 16 0	1 2 0	1 2 0	1 0 0	2 0 0
Maturing ..	0 12 0	0 12 0	1 0 0	2 10 0	1 0 0
Marketing ..	2 10 0	2 10 0	2 10 0	2 10 0	2 10 0
Rent and Taxes ..	1 10 0	1 10 0	1 10 0	1 10 0	1 10 0
*Interest—Depreciation ..	3 0 0	3 7 0	6 0 0	3 0 0	2 0 0
Total Cost ..	29 0 0	32 10 0	43 6 0	50 0 0	60 0 0
Estimated Maximum yield under average conditions ..	1,160 lbs.	1,300 lbs.	1,660 lbs.	1,000 lbs.	1,440 lbs.
Average Cost per lb.	6d.	6d.	6½d.	1s.	10d.
Average Selling Price per lb. ..	4d.	6d.	7d.	1s.	10d.

* NOTE.—This item relates to the curing equipment only, which consists mainly of the curing barn, the cost of which may vary extremely. Elaborate steam-heated barns may cost over £100 per acre of capacity, while disused stone structures may be easily converted and heated by braziers or open fires of hardwood at very small cost. The above charges are for the simplest barns adapted to the peculiar requirements of each tobacco, the cigarette Burley alone requiring steam heat. Fuller particulars on barn construction and curing are given on page 508.

LEAFLET B.—SUITABLE SOILS AND THEIR TREATMENT.

Though the tobacco plant will adapt itself to diverse conditions of soil and climate, still each distinct type requires certain conditions to give to it those qualities of colour, texture, and aroma for which it is prized.

The nature and condition of the soil in relation to rainfall and climate should determine what type of tobacco is most suitable to a given region. The relative moisture-holding capacity of soils is usually a prominent factor in determining the class of tobacco they are adapted to produce, but this is of minor importance in Ireland, owing to the marked influence of its cool, moist atmosphere. Apart from economic and market conditions, climate seems to be the all important factor in deciding what type of tobacco should be grown here.

Soil.—At the present stage of the experiments a classification of soils for tobacco growing would be premature, though it is well to bear in mind the rule that light soils generally produce a finer, brighter leaf than heavy soils. Therefore, lighter soils should be selected for growing cigar wrapper and cigarette types and heavier soils for strong pipe tobaccos. Tobacco of various types, however, has been produced in Ireland with very uniform success upon upland soils differing essentially in character. Moorland seems adapted to the production of a cheap, coarse tobacco. But whatever its nature, the soil must be deep, mellow, and well drained. The supply of plant food should not be excessive for the needs of the type grown. This is a point to be carefully studied, for large yields may be secured at the expense of quality, especially in the case of cigarette tobaccos.

Shelter.—When selecting a field for tobacco the all important subject of shelter from the prevailing winds should be carefully considered. Cold winds retard growth, and wind storms cause enormous damage to the crop; not only is the yield reduced, but the produce is greatly decreased in value. Perfect leaves command the highest price per lb., and it is impossible to obtain these unless a well sheltered field is selected.

The Field.—For the reasons mentioned preference should be given to small fields surrounded by high hedges. Hills and elevations, as a rule, do not afford as much protection as level wooded areas.

Shelter Belts.—In large fields, or exposed districts, additional protection should be provided by shelter belts of tall growing plants or by temporary erections. In such cases the rows of tobacco and the

shelter belts should run at right angles to the direction of the prevailing wind. The belts should be placed at intervals as close as twelve yards apart for Sumatra tobacco, and about double the distance for low growing varieties. Experience will show what is exactly required for each case.

Shelter Plants.—The plants recommended as suitable for shelter belts are:

Kentucky Hemp.—Seed must be imported from Kentucky, U.S.A. Sow in April, in belts one yard wide, either broadcast or in rows twelve inches apart. The land should be thoroughly prepared and heavily manured. No further treatment is required. Hemp is subject to attack by rabbits and slugs. It grows from ten to fifteen feet high. Its utility, except for shelter, is doubtful.

Ne Plus Ultra Peas.—The seed of this plant may be had from any large seedsman. Sow early in rows and support on the side opposite the prevailing wind by means of wide meshed wire netting stretched on strong posts. As the plants grow, secure them to the netting with twine. They grow to about eight feet in height and often give a good yield of peas.

Climbing Haricot Beans.—Seed may be got from Holland. Support by trellis of small poles. Every eight feet a strong stake is driven several feet deep and a single runner is secured to these about six feet from the ground. Smaller poles or rods are then stuck in the ground from four to six inches apart and lashed at their upper ends to the runner. The beans are sown early on both sides of the trellis, and allowed to clamber to their full height of eight feet or more. They are grown in Holland for shelter purposes and give a fair profit.

A windbreak may be made of spruce boughs, etc., in a manner similar to the bean trellis, and if securely braced it serves well. None of these shelter belts will bear the full force of very strong winds. They are, therefore, not sufficient by themselves, but are intended to supplement hedges of hawthorn or trees.

Rotation.—Rotation should also be considered in the choice of a field, as it affects the soil with regard to its texture, fertility and freedom from insects and weeds. Fresh pasture land of long standing is not recommended for tobacco, because the sod is not sufficiently rotted by the time the land is required for planting, and the risks from attacks by slugs, wireworms, and leather jacket larvæ are too serious. These pests may utterly destroy the young transplants, and they are very difficult to combat. A crop of oats taken from the land

will leave the land in much better condition for tobacco, and show whether any pests are to be feared.

Land in rotation is not usually so infested and may give excellent results when well manured. For tobacco, however, the value of fibre and freshness in the soil should not be lost sight of. A young grass field one or two years old, in rotation, and first year oat stubble are, therefore, likely to be in the best condition for the crop.

Manures.—Manuring greatly affects both the quality and the yield of tobacco, but the quality is much more difficult to control. The kind and amount of manure to use depends upon its quality and relative cost, upon the soil, the climate, and the type of tobacco grown. Manures are of such importance to the tobacco crop that a separate article will be devoted to their consideration.

The tobacco plant should produce an enormous growth, and reach maturity within a very short period. For this to occur in the cool climate of Ireland the soil must be very rich and well tilled. Farm-yard manure, being abundant and cheap, is the best tobacco manure for this country, but it has these disadvantages when used alone—it is not sufficiently active in the cool spring weather when soil and root action are slow, and in autumn it tends to prolong the growth. For these reasons a few cwt. of a special, quickly available, artificial manure should be applied near the surface of the drill just previous to planting. The farmyard manure should be distributed broadcast in the autumn before ploughing. All considered, this is the best system of manuring, but excellent results have been secured by manuring in the drill, as is customary with other crops. Not less than thirty tons of well-rotted manure should be applied to each statute acre, unless it is intended to experiment with Turkish tobacco. For this tobacco it is best to fold sheep upon the land for a month or so during the winter, and if good tillage land it will require no further manuring. A similar practice for all tobaccos is to sow rye or a mixture of rye and vetches in October, and turn sheep on the field in March and April. When eaten bare the field is immediately ploughed. This is a most excellent and economical method of manuring by means of which farmyard manure may be largely dispensed with.

Preparation of the Land.—Besides a deep autumn ploughing, the land should have a thorough ploughing in early spring. After that the land should be cultivated whenever weeds begin to grow. Planting may begin after the 15th or 20th of May, and at this time the land requires a thorough and special preparation, which will be described in a future leaflet.

LEAFLET C.—CURING BARNs.

In autumn when leaves are changing colour, from green to gold and brown, Nature is busy curing them in quite the same way as tobacco leaves are cured. The curing barn is only man's device for controlling the natural agents that effect the curing process.

Curing barns may be designed to afford mere protection from inclement weather, or for the more difficult purpose of regulating the temperature and humidity to an exact degree. The perfect curing barn is one that is so constructed that the tobacco may be handled with the least labour, and so ventilated and heated that the temperature and moisture conditions are absolutely under control. The heat should be applied in a manner which will avoid all odours, and the system used should be such that the desired temperatures can be maintained with the minimum of labour, and with no unnecessary waste of material. Such barns are rarely constructed, because the capital outlay is beyond the means of most tobacco growers, and in most climates such perfect equipment is required only in exceptional seasons or circumstances.

The form and construction of curing barns usually vary with the climate, the methods of curing adopted, and the suitable materials that are most easily and cheaply obtained in the locality. Much depends, however, upon the customs of the country, and the ideals and means of the grower. The extremely cool, damp climate of Ireland greatly increases the importance of heating and ventilation in the curing process. Even air curing requires to be supplemented by slight heat at critical periods. When heat is not required abundant ventilation may be necessary owing to the gentle influence of the atmosphere, but all ventilation should be readily controlled, as there are times when the barn should be tightly closed.

Types of Barns.

There are two distinct types of curing barns adapted to the climate and conditions of Ireland, and to the different methods of curing now on trial. One type is used for curing various tobaccos entirely by artificial heat and high temperatures, while the other type depends upon natural atmospheric conditions as far as possible, and artificial heat is used only at times of unfavourable weather. The essential differences in the two types of barns are in their size, interior arrangement, ventilation and heating.

Air Curing Barns.

The width of this type of barn should not greatly exceed 20ft., in order to secure even ventilation. The length should be governed by

the amount of tobacco that the grower can place in the barn within a few days, as it is not desirable to have tobacco in the same barn in different stages of curing, especially at times when heat may be required. On this account short barns are better, though longer structures may be divided into compartments of 30 to 50 feet in length. The height of barns for all methods of curing is regulated by the distance that it will pay to raise the tobacco while hanging it, and by the tendency of the tobacco to cure differently on the top and bottom tiers. For this reason about 20 feet is a suitable height, though more uniform results in curing may be secured in slightly lower structures.

The principle is exactly the same in all arrangements for hanging tobacco in the barn. The arrangement may be seen at a glance by referring to an illustration of this subject in the Journal of the Department for January, 1909. It may be described as follows:—Resting on the wall plates parallel beams are placed across the barn at equal distances apart, forming a horizontal row of supports. At regular intervals below, other tiers of supports are then placed exactly in line with those in the first row. If the rafters are suitably placed, the top row of supports or tier poles may be used as tie beams for the roof, and the collar beams may serve as tier poles. If the roof is very lofty it may afford room for additional tiers of poles. When tobacco leaves are cured on the stalk, the bottom tier should be at least six feet from the ground, to afford sufficient room for hanging, ventilating and heating operations. These parallel rows of poles form a system of racks which support the ends of the curing sticks, on which the tobacco leaves or plants are hung. It is important that the length of these sticks and the width of the tier space should be convenient and perfectly uniform. Hence it is recommended that the horizontal distance between the centres of adjoining tier poles should be exactly 50 inches, and the length of sticks for same exactly 52 inches; for air curing, the vertical distance between tier poles should be fully four feet for plants, and two feet for leaves. This will provide a free passage for air between the tiers. From these remarks it may be gathered that the height and length of a curing barn should be a multiple of the distance between tier poles.

Ventilators should be abundant, evenly distributed, easily controlled, and arranged to prevent rain from beating or blowing in. A continuous ventilator along the ridge of the roof is most efficient. It should be protected by a hood made of curved galvanised iron sheets, and the shutter should be in sections, 10 feet long, and operated from the ground by means of an angle arm, to which is

attached a cord running over a pulley. For side ventilation, horizontal ventilators not over one foot wide and at any convenient lengths are the best. They should form continuous rows along the sill, and just above each line of tier poles, in order to allow the air to pass between each tier of tobacco. Whatever their shape, side ventilators should be hinged from the top to afford shelter when open, and they should be so constructed that they may be held open at any point of elevation.

This type of barn may be heated by stoves, braziers, or open wood fires. In all cases the heat should be well distributed by having a number of small fires rather than a few large ones. Stoves should be placed near the side, or end of the barn, in slight excavations, and the pipes run beneath the tobacco at a very slight elevation, through the opposite wall, and thence vertically to the eave of the roof. The best and cheapest brazier for burning coke is a discarded iron bucket. Two rows of holes, twelve in all, are punched in the sides of the bucket near the bottom, and it is then ready for use. The fire is kindled in the open by placing a small quantity of red hot coke in the bottom of the bucket, which is then filled with coke of the best quality. Another bucket having no bottom, or a similar device, is inverted on the top of the brazier, to produce a draught, and within an hour the smoke has cleared and the coke is red hot. The buckets are then placed in position under the tobacco, and will remain alight for about six hours, with slight attention. Large home-made wire baskets may be used in the same manner for burning turf. Open hard wood fires are kindled directly on the earthen floor, but these should be used for curing only heavy dark tobacco as the smoke would impart an undesirable flavour to cigar and cigarette tobaccos.

Steam-heated Barns.

The other type of barn mentioned may be used for curing tobacco of all classes, but it is neither essential nor economical for curing any but bright yellow tobaccos. For this purpose the curing process is very rapid, and quite independent of weather conditions. The barn is therefore designed to exclude all external influences, and to provide, by artificial means, the necessary conditions for curing. Small barns are the rule, as they must be filled in one day and the curing started at once. The dimensions recommended for Irish conditions are—width, 20 feet; length, 20 to 24 feet; and height, 12 to 16 feet, according to the system of heating adopted. The horizontal distance between tier poles should be 4 feet, and the vertical distance

between tiers 2 feet. This allows for at least four tiers in the body of the barn, and a half tier in the peak. All of the tiers may be used for hanging tobacco, when the leaves are harvested separately, but only every other one may be used when the entire plant is harvested at once. The distance between tiers, and consequently the height of the barn may be subject to slight change, as a result of further experiments.

Ventilation need not be so abundant as in air curing barns. A continuous ridge ventilator having a clear 9-inch opening, and two horizontal ventilators 3 feet long, and 6 inches wide, placed in the front wall at the floor level, will be sufficient.

Heat may be supplied by means of flues or steam pipes. The arrangements for flue heating consist of two brick furnaces built into the front wall near either side, and extending 18 inches outside, and 36 inches inside the barn. From each furnace sheet iron flue pipes, 12 inches in diameter, are run along the earthen floor with an upward inclination of one inch or more to the yard. Near the back wall the pipes bend, and come nearly together. They bend again and return to the front wall through which they pass to the outside, and thence to the roof. Flues are not adapted to Irish conditions, and are not recommended for the following reasons. The only satisfactory fuel is wood, which is required in extravagant quantity. Coal burning flues are equally wasteful, more expensive, and less efficient. The pipes occupy too much barn space, and are very liable to set fire to the barn. The management of flues is both difficult and laborious. In the end they are more expensive for the purpose than steam heating. Flue barns are usually placed some distance apart, to guard against fire, but when heated by steam barns are more conveniently and cheaply constructed under one roof. When a number of barns are required they are arranged in two rows back to back, which saves one wall. In this case a double span roof is necessary in order to secure even top ventilation. If steam pipes are used instead of flues, fully two feet less space is required beneath the bottom tier. This effects a saving in the height of the barn, and in the labour of handling the tobacco. The arrangement of tier poles, and also of ventilation, is the same as for flue barns.

A perfect system of steam heating for curing barns must embody the following features. The heat must be evenly distributed, easily regulated, and ample for requirements. The equipment must be simple, convenient and durable, yet cheap. Its operation must be easy and economical as regards attendance and coal consumption. For this purpose a tubular, horizontal, semi-portable boiler having a

large steam space, and a working pressure up to 50 lbs., may cost more than other boilers, but it is easier and cheaper to operate, and gives better results. A vertical cross-tube boiler would, perhaps, be cheaper, and serve as well, when only one or two barns are required.

The boiler house should be centrally located, but quite separate from the curing barns, as a precaution against fire. It should have an extensive loft, however, in order that the escaping heat from the boiler and flue may be utilised for curing tobacco. The boiler should be lagged to keep in the heat, and the flue may be run the entire length of the loft before it is passed outside. The main steam pipe should pass overhead directly into the barn, and thence along the front wall through each compartment. The heating pipes on the floor are supplied from the steam main by drop pipes, in which are put control valves operated from outside by means of a long-handled detachable key. One or two lin. drop pipes, extending nearly to the ground, are fitted with ordinary valves and hose couplings, to supply free steam direct from the main to each compartment whenever moisture instead of heat is required. The heating pipes proper are evenly distributed over the floor in parallel lines, and are so connected as to form two or three separate coils, which interlap and distribute the heat quite evenly, whether operated singly or together. The pipes are laid perfectly level at least one inch from the floor, on four narrow transverse strips of concrete or iron. Two inch wrought iron pipes with screwed joints are recommended. The number of lengths of pipe should depend upon the radiating surface required to provide sufficient heat for a barn of given capacity. For curing bright yellow tobacco by the quick process it has been found that one square foot of radiating surface is sufficient for every 30 to 35 cubic feet of capacity. For a barn 24 x 20 x 12 feet high, nineteen two-inch pipes, 22 feet long, or *vice versa*, will supply sufficient heat. The heat is under more delicate control, if the coils do not contain the same number of pipes. Three coils give better control than two, but are not absolutely necessary. Each coil is provided with a separate control valve and steam trap. The trap should be placed outside the barn, and the condensation pipe laid in a covered trench made of creosoted wood or concrete. This pipe should return to the boiler-house with a slight fall, and empty into a tank made purposely small in order that the water may be returned to the boiler quite hot. There are automatic feed pumps for this purpose, but steam traps and tank are preferred owing to cheapness and simplicity. A donkey pump connected with the condensation tank, and if possible with a larger tank will supply the boiler with water, but an injector is a useful addition in case of an emergency.

Details of Construction.

The materials used in the construction of all tobacco barns should be bad conductors of heat, else the curing process will be seriously affected by extremes of weather, and heating operations will be rendered more difficult and costly. In this damp, cool climate wood is distinctly the best material for making a dry, warm wall, and new barns should not be constructed of brick, concrete, stone nor iron, though structures so built may be used for curing tobacco. The outside walls may be protected from the damp by a concrete dwarf wall, 12 to 18 inches high, and by a good coat of paint or tar on the wall itself. To withstand high winds the structure should be securely bolted to the foundation, or else a few strong posts or iron girders set in concrete should be used in the construction. The walls of an air curing barn fitted with horizontal side ventilators may be cheaply constructed of vertical studding, placed four feet apart to support tier poles, and covered with rough feather-edged boarding. If the ventilators are made in window form the sheeting may be placed vertically, and should consist of 1-inch tongued and grooved boards, or rough matched boards with joints battened. A very tight wall of the following construction is recommended for steam-heated barns. The studding should be principally horizontal, and the sheeting vertical. The sheeting should consist of two layers of rebated boards, both outside of the studding, with strong rot-proof paper between them. The inside boards should be $\frac{3}{4}$ in. thick, and the outside 1 in.

The roof may be A-section, or circular in shape, but not flat. The cheapest satisfactory roof is made of matched boards covered with roofing felt, but a tighter roof is made like the wall just described, and afterwards covered with roofing felt.

If the studding is horizontal it may be placed the proper distance apart, and used for supporting the ends of tier poles. The tier poles may also be supported and held in place by two upright strips, attached to the wall, which form a groove.

If iron pins, working in holes in the strips, are used to support the tier poles they may be adjusted to any distance apart, or easily removed to make room. For a 20ft. stretch, a 2in. x 5in. tier pole of straight grain has sufficient strength, but each vertical range should be joined together in the middle by a 3in. x 2in. strip in order to distribute the strain and make the tier poles rigid. This is further accomplished by running a horizontal strip across the middle of the top and bottom tiers. Too many stays and supports, however, greatly hinder the operations of hanging, and taking down the

tobacco. Earthen floors are recommended for all curing barns, as concrete is cold, and wood is inflammable. Ventilators and doors should not fit so tightly as to bind, but should be constructed with wide stops to make them air-tight. Wide doors are a great convenience.

Utilization of Existing Buildings.

Existing structures of many kinds may be cheaply converted into curing barns. Their size may vary, though the dimensions given for new barns are best. The walls of stone buildings are cold and moist, hence more heat is required, and conditions are not so uniform as in wooden barns. Existing ventilation should be carefully controlled, and if insufficient more should be provided. In stone structures the tier poles may be supported by wooden uprights resting on the floor, and nailed to the rafters or wall plate. In hay barns the tier poles should rest on stringers, which may be supported by wooden uprights clamped to the H-iron girders. The sides should be enclosed with canvas curtains, or loose vertical boards set in grooves. This arrangement allows the equipment for curing tobacco to be easily removed, and the barn used for the storage of hay during the winter months. Hay sheds thus enclosed may have the sides entirely removed in good weather, but they can scarcely be recommended as permanent tobacco barns. If possible all air curing barns should be situated on fairly high open ground. For this reason lofts make excellent curing barns. Existing structures may be heated by any of the methods previously mentioned, and may be adapted for curing all kinds of tobacco.

Capacity of Barns.

The measure of a barn's capacity is the number of running feet of tier space that it contains. The total amount of tier space required for curing an acre of tobacco will depend upon the number of plants to the acre; the number of times that the barn may be filled in the season; the distance allowed between the sticks when hanging; and the number of leaves or plants hung on each stick. In short it varies with the variety of tobacco, and the methods of production, as indicated in the following table:—

Variety and Class of Tobacco	Type of Barn	Running feet of tier space required per acre	Inside dimensions of Barn in feet.
Pryor for Roll or Plug -	Air Curing	560	28 x 20 x 20
Burley for Roll or Shag -	" "	720	36 x 20 x 20
Sumatra for Cigars -	" "	2,000	50 x 20 x 20
Burley, etc., for Cigarettes -	Steam Heated	520	24 x 20 x 12

Cost of Barns.

The cost of curing barns is exceedingly variable. A new wooden structure to accommodate the produce of two acres, suitable for both tobacco curing and cattle feeding, may cost £80. A new steam-heated barn to accommodate a ten-acre crop can be built by contract for not less than £1,000. The building should cost £600, and the heating £400. The cost of altering additional structures to accommodate an acre of tobacco will vary from £10 or £15 to nearly the price of a new barn. Some buildings need only be racked, which may be done with larch poles by local labour. In this case, if open wood fires be used for curing, the cost of alterations will be very slight.

The subject of curing sticks will be dealt with later, but they will cost from 30s. to 40s. per thousand, and from 1,500 to 6,000 will be required per acre, according to the type of tobacco grown.

Either of the two types of barns herein described may be used for curing Turkish tobacco, though the conventional Turkish system requires rather different equipment. By this method the tobacco is cured in the sun on low scaffolds, and barns are required only during rainy weather, or for storing and manipulating the cured tobacco. For this climate the scaffolds should be provided with waterproof covers, to be used when occasion requires, and the curing must be finished in a heated barn. Almost any well lighted and ventilated building that can be tightly closed will serve these various purposes. Only the top row of tier poles is actually required, as the 9ft. poles to which the leaves are attached, may be suspended from each other by means of wire loops passed over their ends. The amount of barn space required for an acre will be about the same as for Pryor. It should be noted that glass barns have been tried with success, and next season the frames and glass sashes of the seed beds will be used experimentally for curing Turkish tobacco. Stoves are the cheapest satisfactory means of heating barns used for finishing Turkish tobacco, and also for curing cigar tobacco. Both cigarette and cigar tobaccos should be especially free from the odour of smoke, and steam is not absolutely required in handling either class.

It is important to know that steam appliances are necessary in this country for packing those American types of tobacco which are marketed in hogsheads. Owners of steam-heated barns are able to do this work for themselves, and might undertake it for other growers not having the necessary equipment. They would thus

partly perform the services of re-handlers, who in most tobacco-growing countries undertake the final preparation and marketing of the crop.

As these facilities cannot exist in the experimental stage of the industry, the present experimenters have had to provide equipment according to their requirements, for grading, bulking, fermenting, sweating, ordering, packing, and ageing their own tobacco. For these purposes a portion of the curing barn measuring about 20 x 40 feet, should be separately heated and well lighted, particularly on the south side. A strong screw press is required for packing tobacco in hogsheads. A lighter press may be used for packing bales. If a steaming chamber for moistening the tobacco is required the total cost of the packing equipment may reach £10 or more. It is not economical for a grower of one or two acres to finish his own tobacco for market.

At the present stage of the experiments the type of tobacco or curing barn which may supersede all others cannot be selected with much certainty. For this reason it is not wise for an intending commercial grower to erect an expensive curing barn. His interests would be best served by adapting an existing structure, and growing a small acreage of some very promising type of tobacco.

LEAFLET D.—SUITABLE VARIETIES.

Several species of the tobacco plant are cultivated in different parts of the world, but nearly all of the tobacco of commerce is the product of one species, *Nicotiana tabacum*.* Numerous varieties of this species have arisen through differences in soil and climate, and also by seed selection and cross-fertilization, either accidental or intentional. Widely different conditions have produced varieties of quite distinct characteristics, and these in turn have been variously modified by slight local influences, both natural and artificial. Such minor variations have greatly increased the number of recognised varieties, but it is possible to group them into distinct types by reference to their origin and the peculiar characteristics which adapt them to different conditions and uses.

A thorough study of varieties in these respects is the first step in the introduction of tobacco culture into new regions. This subject

* From the writer's experience it seems very unlikely that Turkish and Latakia tobaccos belong to the species *N. rustica*. There is evidence, however, that the tobacco grown in Wexford, eighty years ago, belonged to this very hardy inferior species.

is discussed in the issue of the *Journal* of the Department for January, 1909, and in the Tobacco Leaflet A. (see p. 501), which records the present stage of the experiments in the selection of a type of tobacco distinctly suited to Irish conditions. Four distinct types of the tobacco plant have been recommended for the production of five classes of cured leaf, and it is proposed to mention here the particular varieties of each type that have proved to be the best.

Class 1.—Roll and Plug Tobacco.

Probably the best tobacco of this class comes from Virginia. There are many local varieties which closely resemble each other when grown under the same conditions. Of these, Yellow Pryor is recommended as most suitable. The plants are vigorous, dark green, and of medium height. The leaves are long and fairly wide, with small stems and veins. When well ripened and cured the leaves are inclined to be thick and gummy, giving them great strength and elasticity. Their colour varies from a rich dark brown to a mixed yellow and brown, according to soil and curing. The tobacco produced from this variety in Ireland has been used mostly for plug and roll filler and smoking mixtures. As a wrapper for plug and roll it is not so good. The cool climate and frequent rains prevent the leaf from developing and retaining the necessary oil, resin, and gum to make it sufficiently soft, flexible, and elastic for a good roll or plug wrapper.

Class 2.—Brown Roll Wrapper Tobacco.

Kentucky Burley is the most popular tobacco for this purpose. This is a type of comparatively recent origin, but several varieties of it are now produced. Improved White Burley is the one to grow here for the production of brown roll wrappers. The plants grow low and spreading. Their colour is pale green, with stalks, midribs, and veins almost white. The leaves are very long and tapering. When air cured their colour varies from a light reddish yellow in the lower leaves to a dark brownish red in the upper leaves. Compared with Pryor the leaves are larger, thinner, and not so gummy. The middle leaves should have the requisite colour, size, thickness and elasticity for use as brown roll wrapper. The smaller top leaves are used as plug fillers.

Class 3.—Bright Cutting Tobacco.

The lower leaves of Burley tobacco are too thin and chaffy for plug wrappers, and are used in British markets for making bright

shag. In Ireland it is easier in every respect to produce a bright cutter than a good wrapper from Burley, and if a grower chose to produce cutters entirely, he should grow the variety called Stand-up Burley. It should be said in passing that Burley wrappers are more valuable in this market than cutters.

Class 4.—Cigarette Tobaccos.

The most valuable cigarette tobacco in the world is grown in Turkey. Varieties of Turkish tobacco are usually named after the locality or situation in which they are grown, and are therefore very numerous. For instance, Yacca Kirtzaler is the name of the variety which is grown on the hill-sides near the village of Kirtzaler. Such names convey important information as to the quality of the cured tobacco, but may not indicate any real difference in the seed. In fact, when grown under Irish conditions, closely related varieties are practically identical though there still remain many distinct varieties from which to choose. As many of the best varieties of Turkish tobacco have been grown in Ireland for only one season, it is impossible to make definite recommendations at this date. The following varieties, however, are considered worthy of further trial:—

From Cavalla district—Yacca, Mahalla, Zighna.

From Smyrna district—Giaourkioi, Samos.

The best Turkish varieties grow tall and very slender, producing exceedingly small ovate leaves. When cured they have a rich golden colour shading into brown or green. Turkish tobaccos are noted for their rich aroma and flavour, which vary according to the locality and conditions of growth. Zighna has a comparatively narrow, pointed, thick leaf, noted for its flavour. The Samos variety produces a leaf as coloury as Burley. Yacca and Mahalla varieties have a very fine texture and quality. Giaourkioi produces a highly flavoured tobacco called Salouk.

The so-called Virginia type of cigarette tobacco is produced almost entirely in the States of Carolina and Virginia. It is grown on very light, sandy soils from varieties of the Pryor type which are pre-disposed to cure yellow. This tobacco is produced under less variable conditions than the Turkish type of cigarette tobacco and commands a lower average price. For these reasons variations in the type are not so great and are of less importance. Only certain grades of "bright Virginia" tobacco are used for making cigarettes, the proportion of the crop used for this purpose varying with the soil, season, variety, and market demand. In Ireland the production

of cigarette tobacco from Virginia Pryor varieties is comparatively difficult, and though by means of peculiar methods of growing and curing the bright colour may be secured, the flavour is not that of the Virginia type. This change in the flavour and other qualities practically makes of it a distinct type. The variety which has given the best results is Yellow Oronoko. It is very similar to Yellow Pryor, but its leaves are more roundish and its growth is not so rank. It is earlier and more inclined to yellow. This variety may be grown for the same purposes as Yellow Pryor, but when grown and cured for cigarette purposes it produces a thin leaf of bright yellow colour, varying to brownish yellow or mottled yellow and brown.

In America a bright chaffy grade of Burley is often used in certain cigarette mixtures, though it is not grown and cured especially for this purpose. In the United Kingdom Burley is not used at all for cigarettes. In seeking to make a bright cigarette tobacco in Ireland a way was found of curing Burley a uniform bright yellow colour, surpassing in lustre the best Virginia leaf. This practically new type of tobacco has now been grown for several seasons, and a variety called Stand-up Burley has been found eminently suitable for the purpose. The plants are very compact, as the leaves are erect, closely placed and relatively broad and short. They are inclined to be thin, and yellow very easily. But it is felt that the Burley flavour does not exactly suit a cigarette tobacco, so this variety has been crossed with a Turkish variety and a very promising hybrid obtained.

Class 5.—Cigar Wrapper Tobacco.

For cigar wrapper purposes the island of Sumatra furnishes the ideal leaf. In appearance and quality it is the standard by which all other cigar wrapper leaf is judged. This tobacco is grown in Sumatra under conditions that are very exceptional, yet the high price which it commands has tempted many countries to try its culture. After nearly twenty years Florida has been able to produce the type in its perfection. Some years ago seed was introduced from Florida into Connecticut, and the work of acclimatising the variety there is now meeting with considerable success. Experiments during the past three years have shown that Irish conditions are adapted in many respects to the production of this type of tobacco. Seed from Sumatra, Florida, and Connecticut have been tried, but only the Connecticut seed is sufficiently hardy. Seed imported from Con-

necticut on three occasions produced plants of distinct types, but one type of the variety was perfect and it is now being grown from Irish seed without any apparent deterioration.

The ideal Sumatra plant grows tall and rather slender. Its leaves are very thin, roundish, widely placed, and very uniform in size. When cured they are light in colour, rich in grain, thin in texture, small in vein and stem, very elastic, and of good burning quality. The very slight flavour and aroma of the leaf makes it particularly suitable for cigar wrappers, but of little value for other purposes, especially in the United Kingdom. It is very important, therefore, to get the highest possible percentage of wrappers from this variety.

Seed Saving.

In the production of any class of tobacco the type should be kept perfectly uniform and deterioration prevented by a most careful selection of seed plants and the use of approved methods of saving the seed. Though imported seed has been largely used in these experiments there are many reasons in favour of selecting tobacco seed in the region where the crop is regularly grown. In order to do this properly the grower must have the correct ideal of a perfect plant which, of course, varies with the different types and varieties. It is necessary to go over the field before the plants show flower and carefully select a number of plants which approach nearest the ideal. Selections should be made from the earliest planting, in order to allow time for the seed to mature. An early maturing tobacco being very desirable in this climate, plants showing this tendency should be given preference. Plants change very much as they mature, and if any should develop undesirable features they should be discarded at once. If a few leaves from each plant are cured and fermented they may be compared as to burning quality, elasticity, colour, texture, and weight. If the leaves and seed heads have been properly labelled, only the best seed need be retained for sowing.

All of this labour may be lost, however, if every plant is not protected from cross-fertilization. If insects are allowed to visit the plants the offspring may not be like the parent plant, but a cross may be produced instead. This may be avoided by covering the seed heads before any of the flowers open. If some flowers have opened before the seed heads are bagged, they should be pinched out. A few of the top leaves, and all of the large lower seed branches, should be broken off, and only the central cluster of seed bearing branches

left for seed purposes. As a rule each mature pod contains from three to seven thousand seeds, but of course the grower should save many times the amount of seed that he expects to use. A covering for seed heads that will thoroughly withstand rain and wind has yet to be devised, but a strong, thin, twelve-pound paper bag serves very well. The bag should be carefully fitted over the seed head and the open end tied around the stalk. It is usually necessary to stake the plant and loosely tie both plant and bag to the stake. See Fig. 5, opposite page 228 of the Department's *Journal* for January, 1909. As the plant grows in height the bag should be moved up so as to make room for the flower clusters to expand. When about a dozen seed pods have set, the bag should be removed, and all remaining flowers and buds carefully cut away. If the bag remains on too long the pods may mould, rot, or fall off. When the pods and their stems turn brown the seed head should be cut off with a portion of the stalk, having label attached, and hung up in a dry airy place. They may be kept in this way until spring, but it is safer to remove the pods when dry and put them in a thin paper or muslin bag. If kept in a cool, dry place, tobacco seed retains its vitality for years. The seed should be hulled, and all trash, dust, and light seeds carefully blown out before weighing the quantity required for sowing.

Where to Procure Seed.

The Slate Seed Co., of Hyco, Halifax County, Va., U.S.A., supply very reliable seed of the American varieties, but reliable seed of the best Sumatra and Turkish varieties must be secured from private sources, and is very difficult to get at all.

Those persons who may desire to experiment with either Sumatra or Turkish tobacco are advised to communicate with the Department regarding seed.

LEAFLET E.—SEED-BEDS.

The tobacco seed is very small, about 300,000 to the ounce, and the reserve material for the nourishment of the young plant is soon exhausted. Because of this the seed must be sown in a most carefully prepared seed-bed, and the seedlings brought to the proper stage for transplanting by the exercise of unusual care.

In Ireland it is more expensive and difficult than in warmer countries to produce a plentiful supply of strong healthy plants. The

cheapest form of seed-bed for this country is a tight glass-covered hotbed heated by fresh horse manure. By this method it is too expensive to provide for emergencies by having far more plants than are actually required. Better results may be more surely and cheaply secured by giving most careful attention to every detail in the construction and management of the beds, and it is urged that this plan be adopted.

Size.

The area of seed-bed required for one acre of tobacco will depend upon the variety grown, and the distance between plants in the field. Plants of erect growth, like Sumatra and Turkish varieties, require less space than thick-set plants with large leaves like Burley and Pryor. Turkish seed may yield 2,000 plants to each (6' x 4') sash, as compared with 1,500 from Burley seed, but 50,000 plants will be required for an acre of Turkish, and only 8,300 for an acre of Burley. Accordingly, the following areas of seed-bed should be sown for an acre of the different varieties:—Pryor, five sashes; Burley, six sashes; Sumatra, ten sashes; and Turkish, from twelve to thirty sashes, according to the method of culture adopted. In each case a sash should be 6ft. by 4ft.

Location.

Seed-beds should be conveniently situated facing south, in a very sheltered, sunny place. The ground should be naturally dry, and either level or sloping southward.

Construction.

The approved construction of a tobacco seed-bed is shown by the following illustrations:—

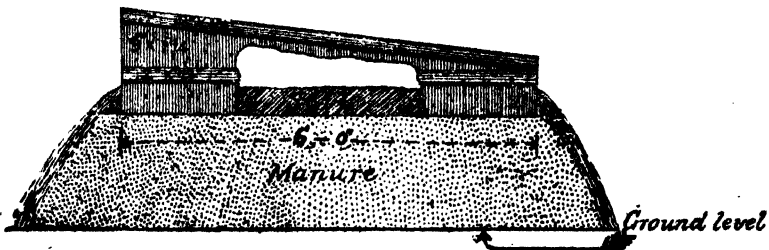


FIG. 1.—END VIEW OF COMPLETED BED, WITH FRAME IN POSITION.

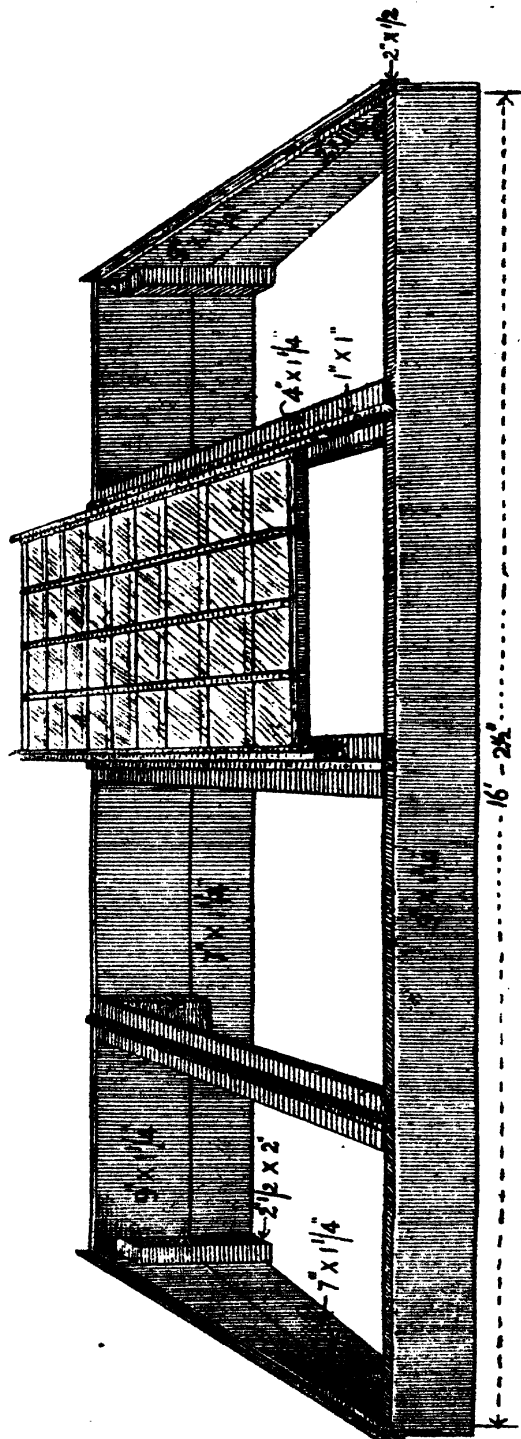


FIG. 2.—FRAME FOR SEED-BED.

This form of hotbed is cheap, simple, portable and convenient. The edges of the bed are warm, and cannot shrink away from the frame, which sinks with the bed, keeping the glass close to the plants.

Frames.

The frame is of tight box construction, with the following outside dimensions. Length, 16ft. 5in.; width, 6ft.; height at back, 16in.; at front, 9in. The front and back boards are bevelled on the upper side to suit the slope of the sashes. There are no mortises, all joints being nailed, and either lapped or battened. The length of the frame allows for a $\frac{1}{2}$ in. space between the sides of each sash and the division boards. This permits the sash to slide freely, even when it is swelled by moisture. The two diagonal boards forming the top portion of the ends may be cut from one 11in. board. In fact all of the boards can be sawn, and the bevels made according to specification at any planing mill, so that a handy-man with hammer and nails can easily put the parts together.

Sashes.

The sashes should measure exactly 6ft. by 4ft. They are stronger with an iron bar across the middle, and more convenient with a handle at either end. These sashes are made in large quantities, and sold very cheap.

Manure.

Horse manure containing a fair amount of straw should be used. Cattle manure is too cold and wet to heat well. The manure should be fresh, or else kept compact and dry to prevent fermentation. It should not be allowed to heat until just before the beds are made. At this time the manure pile should be turned, and a few sticks thrust into the sides and top of the loose, new pile. When the inserted ends of the sticks feel warm to the hand the manure is ready for the beds. It is a mistake to keep turning the manure, allowing the heat to escape, and the fermentation to subside, as there is only a certain amount of heat available, and it is all required. The manure should be well mixed, however, when the beds are being made.

Soil.

The soil for the beds should be a rich, friable, clean loam, free from raw fermenting and weed seeds. Soil may be taken from two or

three inches below the surface of an exceedingly fine old pasture or headland, and if necessary it can be made more friable by adding sand, wood or peat ashes, leaf or bog mould. Rotted sods and rich surface soil mixed with leaf mould are very good, but are liable to contain many weed seeds, which may be destroyed, however, by sterilizing the soil. This may be done by cooking the soil in a covered turnip cooker, by burning it in thin layers, or in heaps containing layers of dry vegetable matter, or by steaming four inch layers of soil in a shallow box, having a perforated false bottom forming a steam space beneath. Steam is introduced into this space under pressure through a flexible hose pipe. Fifteen minutes treatment will sterilize each batch of soil. The soil should be got when dry, and after a thorough mixing and fining, by passing it through a $\frac{1}{2}$ in. riddle, it should be placed under cover until needed.

Making the Bed.

The site should be cleaned or heavily sprinkled with salt or lime to get rid of slugs. The manure may be piled on the level ground, or in a rough excavation 8 in. deep, 7 ft. wide, and one foot longer than the row of frames. The clay thus removed may be used for covering the sides of the bed. A thin layer of dry straw should form the bottom of the pile, which should be built to a height of two feet or more by carefully forking, spreading and packing the manure. While being made the pile should be lightly tramped to prolong the heat, and secure a smooth even surface after the bed has settled. The sides of the pile should be made firm to bear the weight of the frames. The north side should be made very firm, and one or two inches higher to preserve or increase the slope of the sash when the manure settles. One ton of manure is required to each 6 ft. by 4 ft. sash, though more should be used if plants are required in less than six weeks after sowing the seed. Without delay place the frames on the manure, and bank clay against the sides of the bed. Two inches of the prepared soil is now spread on the manure, and over this the final two inches of sterilized soil. If the soil is not very rich artificial manure in the forms advised for tobacco may be spread on the top and raked in. Not more than one pound should be used to each sash. The seed should be sown at once on a surface raked loose and smooth. The usual time for sowing is the latter end of March.

Management.

Sowing the Seed. With this form of seed-bed it is very important to use only seed which is well bred, thoroughly cleaned and tested

for germination. By this means the smallest quantity of seed may be used that will give a perfect "stand" without overcrowding the plants. Between 1-64 and 1-32oz. of the best seed should be sown to each (6' x 4') sash, which may be relied upon to produce 1,200 or 1,500 plants fit for the field within a period of six to eight weeks. The total quantity of seed required should be weighed out, and thoroughly mixed with wood or peat ashes, fine sand or powdered earth, using these materials at the rate of one pint to each sash. Each frame of four sashes should be very evenly sown with four pints of this mixture, which is done with the hand, or a fine sieve, by going over the bed several times. The use of light coloured sand or ashes is a great assistance to even sowing. The seed is then pressed firmly into contact with the soil by means of a smooth board, without raking or covering. The bed should be watered at once, with a very fine nozzle, and kept constantly moist until the seed has germinated, which should occur within ten days.

Shading. If the beds maintain a temperature of 70° F. or over they may be covered with mats until the seed germinates, which will save watering, and check the growth of weeds. If the temperature is low advantage should be taken of any sunshine to warm up the bed. After the seed begins to germinate shading is a disadvantage and a danger. Drawn plants are delicate and often worthless. Shading also induces damping off, and causes green scum on the soil. A warm sun is welcome, as it affords a chance to remove the sash and expose both plants and soil to the air and light, which makes the plants strong and hardy.

Ventilation should be regulated according to the outside temperature and sunshine. It should be very liberal on warm bright days, very prompt after a sudden burst of sunshine on cold days, and very slight on days that are dark, cold and windy. It is important to distribute the ventilation evenly, and to avoid cold draughts and extremes of temperature. If closed before the sun sets the beds will keep warmer during the night. A desirable range of temperature for day and night is 60° to 80° F., but this can seldom be maintained. The temperature should not be allowed to exceed 100°, as it makes the plants soft and weak.

Watering. A plentiful supply of clean water should be convenient to the beds. If the beds are shaded at the start watering may be infrequent, but if not shaded the surface of the bed will require frequent slight waterings, to keep the tiny seeds from dying out. Until the plants are well rooted the surface of the soil should never be allowed to become dry. Frequent drying will weaken or totally

destroy either seed or plants. At this stage the water must be gently applied with a fine nozzle to prevent the seeds or plants from being washed out of the soil. As the plants increase in size the watering should become less frequent and more thorough, and it is then beneficial for the surface of the soil to become dry occasionally. When the plants begin to cover the ground a larger nozzle may be used in watering, and the aim should now be to keep the soil moist and the plants dry. Wet plants and an atmosphere surcharged with moisture induce damping off. These conditions are aggravated by watering in the evening. It is better to water in the mornings of sunny days when ventilation is required, as the sun will warm the water absorbed by the soil and dry off the plants.

If applications of manure are necessary through failure to supply them before sowing, or otherwise, a teaspoonful of nitrate of soda should be dissolved and applied in each two-gallon can of water. Liquid animal manure should be used sparingly as it may cause disease in such tight beds.

Weeding. If the soil has not been sterilized weeds may be very troublesome. If they are pulled up with a twisting motion before the roots branch, no harm will result from their growth or removal. Larger weeds may be clipped at the ground with scissiors, or removed with the greatest care, to avoid dislodging the tobacco plants, which should be watered immediately after.

Thinning. As soon as the plants begin to cover the ground it should be ascertained if they are too thick. A plant fit for transplanting should have occupied one square inch of ground for its proper growth. The first thinning should take place before the plants develop strong roots, but should not be too severe, as some of the plants die naturally. A second thinning will be necessary if the plants are inclined to grow very spindling and delicate. The plants removed will be large enough to prick into vacant places in the beds, or into beds newly made for the purpose. Avoid disturbing the roots of the remaining plants and settle the soil by watering immediately after thinning.

Pricking out. It is not a commercial practice to sow tobacco seed very thickly, and transfer the crowded plants to other beds. It is cheaper, better, and less risky to provide sufficient seed-beds at the start. Pricking out is useful only when an emergency supply of plants is required through a partial failure of the seed beds. Such plants having strong roots, are excellent for filling vacancies in the field. After the 1st of May the beds may need thinning a second

time, and these plants may be pricked into tight cold frames or mild hotbeds. They should be carefully transplanted about one inch or more apart, and covered with glass sashes from the seed-beds for a few days until growth has started. The glass may then be replaced by a covering of thin, tightly-woven tiffany, which has covered the seed-beds in the meanwhile.

Pests and Diseases. Slugs will not invade tight frames, but tiny young slugs are sometimes in the soil used for the beds, especially in garden loam. If numerous they may destroy the plants by eating them as they appear. Their presence may be detected by mutilated leaves, and the occurrence of bare spots near the edges of the bed. The plants may be protected by lightly dusting them with old air-slaked lime sifted through a muslin bag. The application must be renewed after each watering until the slugs are caught, which can be done only after nightfall.

If mice make holes in the bed they should be trapped or poisoned. Swarms of spring-tails and mites from the manure may sometimes cover the bed, but they do no real harm. Mushrooms should be removed as they appear above ground.

Damping off is a kind of rot which is induced by excessive moisture, insufficient ventilation, and unclean water and soil. Affected plants should be promptly removed, the spots limed, and the bed given more air and less water.

Green scum on the soil surface is caused by keeping the soil too wet, and excluding the direct sunlight.

Mosaic disease or "frenching" rarely attacks plants in the seed-bed. The leaves become thick, wrinkled, and vari-coloured. It may occur without apparent cause, but it is usually due to a sodden soil, and extremes of temperature. The disease severely checks the growth, but most plants will usually grow out of it if the causes are removed. Some varieties are more subject to it than others.

Patches of plants may become yellow and refuse to grow. This may be caused by the uneven sinking of the bed, leaving these portions elevated. The soil thus becomes open and dry, especially if it is very coarse grained.

Hardening. About one week before planting, or earlier if the plants are too advanced, the sashes should be left off altogether during favourable weather. This will harden the plants and fit them for the field.

After the plants have been transferred to the field the beds may be used for growing self-blanching celery, cucumbers, lettuce, or for curing Turkish tobacco. When not in use the sashes and frames should be kept dry. All woodwork should be painted or whitewashed, but tar in any form should not be used, as it is very injurious to the plants.

G. N. KELLER.

THE GRASS-SEED GROWING INDUSTRY IN IRELAND.

The area of land in Ireland devoted last season to the production of grass seed may be taken approximately as amounting to over 75,000 acres. This area was divided among the following eight Ulster counties in order of extent, viz.:—Down, Armagh, Londonderry, Monaghan, Tyrone, Antrim, Cavan, and Donegal.

Outside Ulster there was a considerable amount of seed produced in the northern portion of County Louth, and there has also been for some time past an annual small output of seed from certain districts in the counties of Waterford, Tipperary and Kilkenny. There is great difficulty in obtaining definite figures as to the acreage of grass cut primarily every year for the purpose of saving the seed, but from certain facts which have been substantiated by observation and inquiry it may be taken that the industry is materially on the increase.

The varieties of grass seed grown are Perennial Rye-Grass, Italian Rye-Grass, Mixed Perennial and Italian, and Crested Dogstail.

Perennial is the variety which is most extensively grown, "mixed" and Italian following next respectively in order of area: the acreage devoted to Crested Dogstail is comparatively small, and last season approximately reached about 1,000 acres.

The average yields obtained per statute acre are:—

Italian, 5-6½ cwts.

Perennial, 5-6½ cwts.

Crested Dogstail, 2-4 cwts.

and the average prices obtained:—

Italian, 16s.

Perennial, 15s. to 16s.

Crested Dogstail, 80s.

In the case of the two former varieties, the seed is usually sown down with oats following a root crop. The following summer the grass, instead of being cut as it would be if intended for hay when just coming into flower, is allowed to grow fully three weeks longer in order that the seed may be ripened thoroughly. The cutting is done in the ordinary way either with scythes or mowing machines, and the crop tied up in sheaf form with grass bands. The sheaves

are usually arranged in half stooks of three aside, or four tied together at the top with a band after the manner of oats: when sufficiently dry these are subsequently put into small clamps or handstacks. As a

rule, three weeks of good weather are required before the crop is saved. Threshing out the seed is done either with the steam machine or the ordinary horse threshing mill of the farm: by some of

the smaller growers the more primitive method is employed of lashing off the seed in the field over a plank with a large cart cover spread underneath, or of beating it off with a flail. When the steam thresher, which is provided with suitable sieves for thorough cleaning, is not employed, the ordinary fanning machines fitted with special riddles are used to prepare the seed for market. After being cleaned the seed is generally spread out on a loft floor to dry and to improve it in condition for sale.

Crested Dogstail, where grown for seed, is sown down by itself at the rate of 20 lbs. per statute acre, and if intended for cutting in its first year is forced on by the application of suitable artificials. In some districts, however, where sown alone, cutting for seed is deferred until the second year. This variety is most extensively grown in the districts adjoining Lurgan and Lisburn. The small quantity of Crested Dogstail which comes from the southern counties is, as a rule, handpicked. The largest and most important marketing centres for Irish-grown grass seed are: Belfast, Newry, Lisburn, Portadown,

Marketing the Cookstown, Ballymena, Ballymoney, Cooteshill, Coleraine, and Magherafelt. Buying is chiefly

done by local merchants who purchase on commission, or by the representatives of the leading firms engaged in the seed trade. The great bulk of the business is done between the early weeks of August and the close of November. On the score of desirable farm practice the growing of grass for seed production is open to the twofold objection that the exhaustion of the plants causes the subsequent pasturage to be very inferior, and the quality of the hay left after the removal of the seed is much depreciated. The actual margin of depreciation between ordinary well-saved and "threshed" hay is put down by some growers at 10s. per ton, but not infrequently the latter is disposed of to city buyers lacking in judgment, at almost equal rates. Farmers who use both fully appreciate the difference, however, and know that care in feeding threshed hay to horses must be exercised if digestive troubles and wind affections are to be avoided. On the other hand, the cultivation of grass

seed as a farm crop has this to recommend it, that where flax is not grown it supplies work for the farm hands at a slack period of the year before the busy days of harvest have arrived. In addition, the sale of the crop comes in very handy for the small farmer who realises from it sufficient ready capital to meet the expenses of extra labour during the weeks of harvest which follow.

Although for the past two or three seasons the range of prices maintained a satisfactory level (12s. 6d. to 16s.), the average rates in other years did not much exceed what is regarded as the minimum figure to allow a margin of profit, viz., 9s. per cwt. It is

Range of Prices.

difficult to speculate as to whether good prices may continue, so uncertain is the market and so dependent is it on foreign orders, which in turn are largely affected by the quality and supply of the foreign crop available. The nature of the season and the conditions under which the crop has been saved are the factors which decide the quantity and quality of the stocks available either at home or abroad in any given year, and it is largely by the variation between the two sources that prices are fixed for the home grower. Scotland, Germany, France, Canada, and New Zealand, are all noted centres of production for different varieties of seed. Ayrshire Perennial, French Italian, and New Zealand Cocksfoot must be familiar from their frequent quotation in trade circulars; yet, though each of these countries takes pre-eminence in the market for the production of one or more varieties of seed, it is a fact too little known, and yet none the less true, that at the present time, the quality of Perennial Rye Grass Seed produced in Ireland, where well saved, is the best that can be purchased.

FLAX SEED, 1909.

DUTCH FLAX CROP.

Inquiries instituted by the Department show that, as compared with the previous year, a much less area was cropped with flax in Holland in 1908. The estimates of this decrease vary, but it would appear that the acreage in 1908 was at least 20 per cent. less than in 1907. There were prospects for a good crop of flax and seed in most of the Dutch flax-growing districts, as the weather was most favourable during the entire period of growth. Heavy rains interfered with the harvesting of the seed in some districts, but with those exceptions the promise of a good crop of seed was realised, and, in spite of the decreased acreage, it is estimated that the quantity of seed is much the same as in 1907. Though some seed was spoilt by heavy rains at harvest, and contains, therefore, black or discoloured pickles, the quality of the seed, on the whole, is reported good, and many lots to be well above the average.

The results of the testing of samples at the Department's seed testing station confirm the above summary of reports from Holland. A few samples of very high quality, and many of good quality, have been examined, and *Irish farmers who sow Dutch seed should be able to procure good Riga Child seed.*

RUSSIAN FLAX CROP.

Reports furnished to the Department from the flax-seed producing districts of Russia show that in that country there was a decrease in the area under flax amounting to some 20 per cent. The weather proved good for the crop in the early stage of growth; this period was followed by a spell of unfavourable weather, and the improvement brought about in the subsequent few weeks when better climatic conditions prevailed was not general over the country, for in certain districts the crop was harvested under most unfavourable circumstances, and a poor yield of seed was produced. As a result it is estimated that there will be at least 25 per cent. less seed available than in the previous year. In quality the seed is on the whole poorer than that for 1908 sowing. The seed is light in the pickle, and much of it is discoloured. A few fairly good samples of seed from the Pernau district have been submitted to the Department, and *growers sowing Russian seed in 1909 are again recommended to purchase "Pernau Crown."*

GENERAL.

From the above report as to the harvest of seed in parts of Holland and Russia it is evident that it will be necessary for growers, particularly if they intend to purchase Russian or Riga seed, to be more than ordinarily careful in the selection of their sowing seed. Of all the more general crops, flax is the one for which the greatest caution is required in the purchase of seed. The Department would, therefore, urge on flax-growers the necessity of having the germination, purity, and weight of their seed tested at the Seed Testing Station, at which, for a nominal charge of 3d. per sample, growers are afforded exceptional privileges of satisfying themselves as to the quality of the seed they propose to sow for next season's crop. Irish growers know well the difference between the crop grown from good and that grown from bad seed, and that the small extra outlay involved in the purchase of high-class seed is returned many times over in the superior yield and quality of the resulting crop.

The returns from field trials with varieties of flax seed carried out by the Department in various districts and on many classes of soils during the last eight years have shown that no definite rule can be laid down as to suitability of either variety of seed—Riga or Dutch—for a certain soil or district. In some years the first named variety has almost uniformly given the better results on all soils and in all districts, and in other years the latter variety has proved the better. Farmers are, therefore, advised not to confine themselves to the use year after year of either variety of seed, but to sow in any one year the seed which gives the best results on being tested.

Special envelopes in which to forward samples of seed for testing may be procured free of charge on application to the Department.

Copies of this article in leaflet form (No. 29) may be obtained free of charge, and post free, on application to the Secretary, Department of Agriculture and Technical Instruction for Ireland, Upper Merrion-street, Dublin. Letters of application so addressed need not be stamped.

OFFICIAL DOCUMENTS.

II.—AGRICULTURE.

Scheme No. 15.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

SCHEME FOR ENCOURAGING IMPROVEMENT IN THE MANAGEMENT OF CREAMERIES.

General Regulations.

1. The object of this Scheme is to encourage improvement in the manufacture and marketing of dairy produce by providing facilities for obtaining advice on technical and business methods affecting the management of creameries and auxiliaries.

2. For the purposes of this Scheme—

(a.) The term "Creamery" shall mean any premises adapted and utilised for the manufacture of butter from cream separated by centrifugal force from the commingled milk supplies of a number of cowkeepers, provided that, on every day on which milk or cream is treated at the premises, the quantity so dealt with is sufficient to make at least fifty-six pounds of butter, and that the premises are not utilised for any purpose which would necessitate their registration under the Sale of Food and Drugs Acts, 1875 to 1907.

(b.) The term "Auxiliary" shall mean any premises adapted and utilised for the separation of cream by centrifugal force from the commingled milk supplies of a number of cowkeepers, and which otherwise complies with the definition of a creamery.

(c.) The term "Creamery butter" shall mean butter made in a creamery as defined above.

(d.) The term "year" shall mean the twelve months commencing on the 1st January and terminating on 31st December.

3. Creameries and auxiliaries, from which applications (on Form A, 175, signed by the proprietor or by the president or chairman of the society or company owning the creamery or auxiliary) are duly received and accepted by the Department, will be inserted on a list of places to be visited by the Department's Instructors in Dairying. Provided that creameries having auxiliaries under their control will not be entered or retained on the list in question unless *all* the auxiliaries are at the same time entered or retained on the list. On the occasion of each visit all necessary advice will be afforded on matters relating to creamery management, and a report embodying

the Instructor's observations on the condition and working of the creamery and staff will be entered in a special report book to be supplied by the Department, and to be carefully preserved at the creamery or auxiliary and produced for the inspection of the Department when so required. Supplementary reports, as may be thought fit, will be furnished to the proprietors.

4. Creameries and auxiliaries from which applications on Form A 175 are accepted will be visited by the Department's Instructors until notification is given to the contrary on either side. Creameries or auxiliaries on the list of those receiving visits from the Instructors at the date of publication of the Scheme will be considered as entered for visits under this Scheme, unless notification to the contrary is received from the proprietor or from the president or chairman of the society or company owning the creamery or auxiliary.

5. Applications (on Form A 174, signed by the proprietor or by the president or chairman of the society or company owning the creamery or auxiliary) may be made for visits of the Instructors for any special purposes, *e.g.*, the preparation of sketch-plans, and notes for buildings, or suggestions for specifications for machinery. It is, however, to be understood that, except in cases of special urgency, applications of this nature cannot receive prior attention to those made on Form A 175.

Applications on Form A 174 will be considered only from creameries and auxiliaries included in the list of those visited by the Instructors in connection with applications on Form A 175.

6. The premises and methods of creameries and auxiliaries entered on the list of those visited by the Department's Instructors must be open at all reasonable times to inspection by the Department.

7. The Department may, without assigning any reason, refuse to send an Instructor to any creamery or auxiliary.

8. The Department will publish from time to time a List containing the names and addresses (with such other particulars as may be thought fit) of those creameries entered for inspection which satisfy the Department in the following matters:—

- (1.) That proper care has been taken by the proprietors and staff to secure that the milk or cream dealt with at the creamery or auxiliary is supplied in a clean condition and in clean vessels.
- (2.) That proper care has been taken by the manager and staff to maintain cleanliness and order in the management and condition of the creamery or auxiliary.
- (3.) That the bookkeeping and business methods are efficient.
- (4.) That the buildings and equipment are not unsuitable.
- * (5.) That suitable packages are used for butter, and in the case of 56lb boxes and 112lb. kiels that they conform with the standard specifications (see Appendix II.).

- *(6.) That apprentices and pupils (if any) receive efficient training and instruction.
- *(7.) That, if the creamery is included in the latest published List, an exhibit is forwarded to each of the surprise butter competitions held by the Department since the date of application.
- [Failure on the part of a creamery to forward an exhibit for any one competition will, except in circumstances which in the opinion of the Department afford a satisfactory excuse for such failure, disqualify the creamery for inclusion in the next List to be published by the Department].

Surprise Butter Competitions.

9. On a number of occasions at the option of the Department a telegram will be forwarded to each creamery on the latest published List (see clause 8), requesting the recipient to send to an address in Dublin or elsewhere a kiel, keg, or box of creamery butter made on the day the telegram is despatched. Provided that a creamery which is removed from the list of those visited by the Department's Instructors in Dairying shall not be entitled to take part in the competitions.

10. Between the 1st October and 1st May telegrams will be issued on Mondays, Wednesdays and Fridays only.

11. The following scale of points will be adopted as the basis in judging:—

Flavour,	.	.	60 points.
Texture,	.	.	25 „
Colour,	.	.	5 „
* Packing and finish,	.	.	10 „
Total,			100 points.

12. The butter at each competition will be judged one or more times by one or more persons appointed by the Department, and in one or more sections according as the Department may consider desirable.

13. Provided the Department consider that the exhibits show sufficient merit, the following prizes will be given in each competition on the basis of the highest total number of points, viz.:—

Prizes for 1st class,	.	.	£2 each.
Prizes for 2nd class,	.	.	£1 each.

In addition, a sum of 10s. will be awarded in each case to the dairy-maid or actual maker of an exhibit obtaining a first-class prize.

* Not applicable in the case of auxiliaries.

† See Clause 8 (5).

14. The following special prizes will be offered, in each section, for competition among creamery managers :—

- (1.) To the manager of the creamery obtaining the highest aggregate marks at three-fourths of the total number of competitions held during the year, £10
- (2.) To the manager of the creamery obtaining the second highest aggregate marks at three-fourths of the total number of competitions held during the year, £6
- (3.) To the manager of the creamery obtaining the third highest aggregate marks at three-fourths of the total number of competitions held during the year, £4

15. The quantity of butter in each exhibit must be either 56 lbs. or 112 lbs. packed in a box, keg, or kiel, similar to those in regular use by the competitor. In special circumstances the Department may, in the case of competitions held between 1st October and 1st May, accept a smaller quantity of butter, but in all such cases a previous arrangement, in writing, must be made with the Department both as regards the quantity of butter and the package to be used.

16. Competitors using packages for the competitions other than those in general use at their creameries will be disqualified for one or more competitions as the Department may decide in the circumstances of each case, and will forfeit any prizes that may have been awarded to their exhibits.

17. Exhibits packed in 56 lb. boxes or 112 lbs. kiels which fail to conform with the Department's standard specifications (see Appendix II.) will be disqualified, unless a previous arrangement, in writing, is made with the Department as regards the package to be used. Such arrangements, however can only be permitted in very exceptional circumstances. Less serious divergencies from the specifications may, at the option of the Department, be penalised by deduction of marks instead of disqualification.

18. The butter must be made at the creamery on the day on which the telegram is received, from cream separated on a preceding working day, and must be forwarded by passenger train, carriage paid, on the day on which the telegram is received.

19. Excepting the direction labels supplied by the Department, there must be no mark or label in or on the package of butter which might indicate its origin.

20. The carrying company's receipt must be transmitted to the Department by post on the day on which the exhibit is forwarded.

21. Unless the carrying company's receipt is received at the office of the Department by the ordinary postal delivery on the morning of the day following that on which the telegram is despatched, the exhibit will be liable to be disqualified.

22. Butter containing any preservative, more than 16 per cent. of water, or more than 3 per cent. of salt, will be ineligible for a prize.

23. The butter sent in for competition will be paid for by the Department at the end of the year. The prices given will be based on the current market rates prevailing for the various classes of butter at the dates on which the telegrams are despatched, and shall be determined by the judges.

24. Any butter which reaches the Department in an unsatisfactory condition or which develops defects which, in the opinion of the Department should be seen by the competitor, may be returned to him at his own risk, and will not be paid for.

25. The Department may, without assigning any reason, refuse to accept for competition butter from any creamery.

26. In all cases of dispute in matters connected with any part of this Scheme the decision of the Department shall be final.

WINTER COURSES OF INSTRUCTION.

During the winter, courses of instruction in the subjects of examination for the Creamery Managers' Certificates may be provided. Attendance at the annual course of instruction for students of agriculture at the Albert Agricultural College, Glasnevin, is recommended as a preliminary general training for young men who may intend to become creamery managers.

SCHOLARSHIPS FOR STUDENTS OF CREAMERY MANAGEMENT.

One or more scholarships, tenable at the Royal College of Science, Dublin, may be offered yearly to students who desire to specialise in subjects relating to the management of creameries. Particulars as to the date, place, and subjects of examination will be published by the Department in due course.

CERTIFICATES.

An examination will be held annually in March in technical subjects as applied to creamery management, and a certificate of having passed the examination will be awarded to successful competitors. The subjects of the examination are set forth in Appendix III. Due notice of time and place will be given to applicants.

A special certificate designated the "creamery manager's certificate" will be granted to candidates who having passed the examination in technical knowledge satisfy the Department with regard to their practical ability as creamery managers. This certificate is valid for one year only, but is renewable annually provided the standard of merit is maintained.

Applications for admission to the examination should be made, not later than 15th February, on Form A 187, to be obtained from the Department, and must be accompanied by a deposit of £1, which

will be returned if the candidate presents himself for examination, or if his application is not accepted.

The Regulations of this Scheme are subject to revision from time to time.

The Appendices and List of creameries and auxiliaries published by the Department in connection with this Scheme are printed separately, and may be obtained free of charge, and post free, on application to the Secretary, Department of Agriculture and Technical Instruction for Ireland, Upper Merrion Street, Dublin. Letters of application so addressed need not be stamped.

January, 1909.

SCHEME No. 20.

DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND.

SCHEME FOR ENCOURAGING IMPROVEMENT IN THE
DAIRY CATTLE OF IRELAND THROUGH THE SELEC-
TION AND REGISTRATION OF COWS.

OBJECTS OF THE SCHEME.

Dairying, as well as the raising of store cattle, is one of the principal branches of agriculture pursued in this country. It is, accordingly, of importance that the milking properties of Irish cattle should be preserved and improved. In dairy herds the yield and quality of milk given by each cow largely determine whether that animal realises a profit or entails a loss to the owner; consequently it is essential that farmers should know exactly the quantity and quality of milk which each cow yields per annum. At the same time, as young cattle are a considerable source of revenue, it is desirable that the good milking cow should be of the type likely to produce a calf which will be of value for both beef and milk. With the object of encouraging the improvement of Irish dairy cattle, the Department have decided to put into operation the following scheme.

REGISTER.

1. The Department will keep a register of dairy cattle in which cows and their produce may be entered, subject to the provisions of this scheme. The inspection of cows with a view to entry on this register will be carried out by the Department.

TYPE OF COWS ELIGIBLE FOR REGISTRATION.

2. Owners of good cross-bred and pure-bred dairy cows are invited to apply on the prescribed form for the inspection of their stock by the Department as regards:—

- (a) General merit (*i.e.*, appearance), and
- (b) Milk yield.

Only cows of a distinct and well-defined type are eligible.

FORM OF APPLICATION AND ENTRY FEE.

3. Application for inspection of cows must be made on the prescribed form, and must be accompanied by a fee of 2s. 6d. in respect of each cow entered for inspection. Only such animals as are mentioned on said form will be inspected.

Applications must be lodged with the Department on or before 31st March in each year.

As soon as all the applications have been received the Department will give due notice to each cow owner of the centre fixed for inspection of his animals.

INSPECTION OF COWS.

4. Cows will be provisionally selected, on the ground of general merit, at local shows, local exhibitions, or at such other convenient centres as may be determined by the Department.

With regard to inspections elsewhere than at local shows, it should be understood that the Department, save in exceptional cases, cannot undertake to send an inspector to any district unless at least ten cows from such district are offered for inspection.

All animals provisionally selected for general merit under this scheme will be suitably marked by the Department for future identification.

PROVISIONALLY SELECTED COWS.

CONDITIONS TO BE OBSERVED IN REGARD TO PROVISIONALLY SELECTED COWS.

5. Owners of cows provisionally selected under Clause 4, are required to observe the following conditions:—

- (a) To provide themselves with an approved type of machine for weighing milk;
- (b) To weigh the milk yielded by each cow on every seventh day during the entire milking period (the exact day of the week for each herd will be fixed by the Department), and to record the same on the form provided for the purpose;
- (c) To permit their herds to be inspected by the Department at any time; and,
- (d) To afford the Department every facility for examining the milk records and for taking samples of the milk of each selected animal.

FORWARDING OF MILK RECORDS.

6. The records kept under Clause 5 (b) shall be forwarded to the Department when required. This will, usually, be at the end of the year following that in which the cows were provisionally selected.

REGISTRATION OF COWS.

7. As soon as possible after the receipt of these records, the Department will notify to each owner of a provisionally selected cow their decision as to the registration or rejection of the animal.

PROGENY OF PROVISIONALLY SELECTED COWS.

8. If the owner of a provisionally selected cow complies with the requirements of Clause 9, and if the cow is subsequently accepted for entry in the Department's Register, particulars of the progeny with regard to which the necessary certificates have been furnished prior to the registration of the dam, will be duly recorded in the Register, and such progeny will be entitled to the same benefits as if calved after the registration of the dam.

REGISTERED COWS.

CONDITIONS TO BE OBSERVED IN REGARD TO REGISTERED COWS.

9. The owner of each registered cow must comply with the following conditions:—

- (a) To have the animal served by a pure-bred bull of her own type passed by the Department as eligible for a premium:

[N.B.—Registered dairy bulls passed by the Department as suitable for a premium under their Cattle Breeding Scheme may not, unless eligible for entry in the herd books of their respective breeds, be used for the service of registered cows.]

- (b) To forward on the prescribed form a certificate of service to the Department within three months from the date of such service;
- (c) To furnish to the Department on the prescribed form, within seven days from the date of birth, particulars regarding sex, colour, markings, &c., of each calf produced by a registered cow; and,
- (d) To keep on the prescribed form a record of the breeding, date of birth, &c., of produce, for the purposes of future registration.

PROGENY TO BE INSPECTED.

10. The female progeny from the service of registered cows by approved pure-bred bulls will be eligible for inspection at or about two years old, at a fee of 2s. 6d. each.

DISPOSAL OF COW OR CALF TO BE NOTIFIED.

11. When a registered cow or her calf has been disposed of, the Department must be notified of the fact within fourteen days of the disposal of the animal, and at the same time advised of the name and address of the new owner.

The death of a registered cow or her calf must also be notified to the Department within fourteen days of the death of the animal.

DEPARTMENT'S DECISION FINAL.

12. In all cases of dispute in matters connected with this scheme the decision of the Department shall be final.

SCHEME No. 21.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

LOANS FOR THE REPAIR AND EQUIPMENT OF MEAL MILLS, KILNS FOR DRYING, &c.

The Department are prepared to consider a limited number of applications for loans to aid in the repair and equipment of existing mills, etc., or the adaptation of existing buildings to be used as such, subject to the following conditions:—

1. The application must be made on the prescribed form, which can be obtained from the Department.

2. The amount to be advanced by the Department under this Scheme shall not exceed two-thirds of the approved cost.

3. The applicant shall furnish the Department with a statement setting forth the special object in view in providing the mill, together with such details as to site, particulars of tenure, etc., as the Department may require.

4. The applicant shall not take any steps to begin the work of repairing, equipping or erecting the building, or incur any liability until the Department have signified in writing their approval of the plans, estimate of cost of repair or of additional buildings, and machinery and equipment, etc.

5. The sum advanced shall be expended in a manner approved of by the Department.

6. The sum advanced shall be duly charged as a first charge on the building, machinery and equipment. In addition, the applicant shall, together with two solvent sureties approved by the Department, enter into a bond to repay the loan in not more than ten equal annual instalments, payable on the 1st day of January in each year, with interest at the rate of 3 per cent., the first instalment to be repayable, with interest calculated from the date of advance, on the second gale day following the date of said advance. Provided, however, that the

borrower shall be at liberty to pay the full amount of the balance of the loan at any earlier period, together with the interest to date.

7. During the period the loan is outstanding, the buildings, machinery and equipment shall be kept in proper repair, and adequately insured, by the applicant at his own expense. The receipts for insurance premiums shall be submitted to the Department when required.

8. The Department shall have the right at all reasonable times to inspect the buildings, books, machinery and equipment.

9. The applicant shall undertake to furnish such reports and to keep such accounts in connection with the working of the mill as the Department may require, and shall submit same to the Department when requested to do so.

10. In all matters relating to loans under this scheme, and to the regulations of the scheme, the decision of the Department shall be in every respect final and conclusive.

In the event of an instalment of principal and interest being in arrear for more than four weeks, the Department shall be at liberty to act in any one or more of the following ways at their discretion :—

(a) to recover with costs the amount of the instalment of principal and interest from the applicant and his sureties;

(b) to recover with costs the outstanding balance of the loan, with interest, from the applicant and his sureties;

(c) to take possession of the mill buildings, machinery and equipment, and to sell same in satisfaction of so much of the loan as may not be recovered from the applicant and his sureties.

FORM A. 133 (a.).

DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND.

ROYAL COLLEGE OF SCIENCE, DUBLIN.

SESSION 1909-10.

SCHOLARSHIPS IN AGRICULTURE, HORTICULTURE,
FORESTRY, AND CREAMERY MANAGEMENT.

A limited number of scholarships will be offered in 1909 for competition among young men in Ireland who desire to acquire a thorough knowledge of technical Agriculture, and, in addition, one or more scholarships will be provided for students who intend to specialise in either Horticulture, Forestry or Creamery Management. Each scholarship includes—(1) free admission to the first year's course of instruction in the College, (2) one third-class railway fare to Dublin at the beginning of the session, and one third-class fare from Dublin at the end of the session, and (3) either of the following at the option of

the Department—(a) a maintenance allowance of one guinea per week while in attendance at the Royal College of Science or elsewhere, as the Department may decide; or (b) free board and residence at one of the Department's institutions; in the latter case a small grant will be made to each student towards the cost of books and apparatus.

A scholarship is tenable for one year, but selected candidates must undergo a probationary course of one term of about three months. If satisfactory progress be made by the holder, the scholarship may be renewed for a second, for a third, and, in certain circumstances, even for a fourth year, to enable the student to complete his course.

The Department do not undertake to employ, or find employment for, students at the close of the period of training.

Holders of these scholarships will be subject to the regulations made from time to time at the Royal College of Science, and will be required to devote their whole time to the course of study prescribed for them by the Department.

Candidates, who should be between 18 and 30 years of age on the 1st September, 1909, must make application on a form, which may be obtained from the Registrar, Royal College of Science, Dublin, after the 1st February, 1909, and which should be returned not later than the 4th August, 1909.

Candidates must have been born in Ireland or have been resident in Ireland for three years immediately prior to the 1st June, 1909.

The examination will take place at the Metropolitan School of Art, Kildare-street, Dublin, on the 18th and 19th August, 1909, and at the Albert Agricultural College, Glasnevin, on the 20th August, commencing each day at 10.0 a.m. No expenses in connexion with attendance at this examination will be allowed.

Candidates will be tested in the following:—

A.—ENGLISH.

- (1) Composition—to be tested by an essay.
- (2) Grammar—Etymology, and the principles of Syntax.
- (3) Literature—the following works:—(a) Macaulay, "Clive";
(b) Goldsmith, "The Deserted Village"; (c) Coleridge,
"The Ancient Mariner."

B.—One of the following:—

LATIN;
IRISH;
FRENCH;
GERMAN.

In these languages the papers will comprise—

- (1) Passages for translation from the following texts:—

Latin—Cæsar, "De Bello Gallico" (Book IV.).

Irish—*Ḍan t-Ḍairíe Beasair Ó Laoisair* "Ḍeap Ḍ táinis
Ḍo n-Ḍiunn."

French—Xavier de Maistre, "Le Lepreux de la Cité
d'Aoste."

German—Anderson, "Bilderbuch ohne Bilder."

- (2) Easy passages for translation into English from other texts.
- (3) Questions in Grammar—Accidence and the principal rules of Syntax.
- (4) Short sentences for translation from English.

C.—MATHEMATICS.

- (1) Arithmetic—including elementary Mensuration.
- (2) Algebra—to quadratic equations inclusive.
- (3) Plane Geometry—to be tested partly by questions requiring formal proofs of propositions from Euclid I.-III., and partly by practical problems to be solved by compasses and scale of equal parts.

D.—Practical experience of *one* of the following:—

AGRICULTURE;

HORTICULTURE;

FORESTRY;

DAIRYING AND CREAMERY MANAGEMENT.

Each applicant must have had substantial experience of practical work in connexion with farming, gardening, the management of woodlands, or dairying and creamery management. The examination may be written, oral and practical. The subjects will include all the ordinary work of farms, gardens, woods, or dairies, as practised in Ireland.

N.B.—On no account will a scholarship be awarded to a candidate who fails to attain a high standard in the subject he selects for this portion of the examination; while excellence in that subject will be taken into consideration in case of deficiency in one or more of the others.

E.—ABILITY TO IMPART INSTRUCTION:—

Gauged by the style of the answers in both the written and the oral examinations.

Candidates who are qualified for scholarships by their examination on the foregoing subjects will be required to submit to an examination by a medical officer appointed by the Department. A scholarship will not be awarded in any case where the candidate is certified to be physically unfit to undertake the prescribed course of studies.

Last date for receiving applications, 4th August, 1909.

December, 1908.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

AGRICULTURAL EDUCATION FOR YOUNG MEN.

Session 1909-10.

FARM APPRENTICESHIPS.

AGRICULTURAL STATION, CLONAKILTY, COUNTY CORK.

Young men who intend to follow the farming profession and who desire to acquire a practical knowledge of its several branches are admitted to the Station as apprentices.

The farm is managed by an experienced agriculturist under whose direction the apprentices are required to take part in all the work of the fields and of the farmyard, whether in connection with seasonable operations or permanent improvements. In the class-room attention is given, in the evenings and at other times when outdoor work is not pressing, to English, Arithmetic (including Surveying), Book-keeping and Technical Agriculture. This instruction is not intended as a preparation for any examination. It is of such a character as to continue the general education of the apprentices, and be useful to them in their future career as farmers.

Applicants for apprenticeship must be not less than seventeen years of age on the 1st October, 1909, and each must give an undertaking that it is his intention to become a farmer in Ireland. He must also provide, in his application form, evidence of a sure prospect of obtaining a farm of his own, or *bonâ fide* occupation on a farm. Preference will be given to applicants from the province of Munster, especially to those who have attended a course of instruction under the Department's Scheme of Winter Agricultural Classes. It will also be a recommendation if the applicant produces a certificate from the Itinerant Instructor in Agriculture for the County in which he resides that he has taken advantage of the Instructor's lectures and demonstrations and has shown a desire to improve his knowledge of tillage farming.

The apprentices are required to reside in the buildings attached to the station, where they are in charge of a house master and matron.

The Session will commence on the 6th October, 1909, and will terminate on the 2nd September, 1910.

Admission as an apprentice is conditional on passing the entrance examination, producing certificates of good health and character, and paying the required fee according to the scale indicated overleaf.

Applicants who have been pupils at Winter Agricultural Classes will be exempted from the entrance examination provided their attendance and progress at the Agricultural Classes have been satisfactory.

ENTRANCE EXAMINATION.

Particulars as to the date of this examination and the place at which it will be held will be notified to each applicant.

The following subjects are included in the examination:—

Arithmetic—Simple calculations requiring a knowledge of weights and measures.

English—Dictation, Grammar and Composition.

The examination will be of such a nature as should present little difficulty to a young man who has passed the fifth standard at a National school.

No candidate will be admitted whose general education is insufficient to enable him to profit by the class-room instruction, or who is, in the opinion of the Department, unsuitable in any other respect for an apprenticeship.

No expenses will be allowed to candidates in connection with their attendance at this examination.

FEES.

1. For apprentices whose parents or guardians derive their means of living mainly from farming in Ireland the fees are proportional to the aggregate tenement valuation of their holdings, as follows:—

	<i>Per Session.</i>
Where the aggregate valuation does not exceed £20,	£3
Exceeds £20 but does not exceed £40,	£6
Exceeds £40 but does not exceed £100,	£10
Exceeds £100,	£15

2. For apprentices not included in the foregoing classes, . . £20

Apprentices will be notified of the fees payable by them. Fees must be paid to the Superintendent on entrance, and in addition a sum of £1 must be deposited at the same time to cover the cost of repairs to clothes, the purchase of books, stationery, &c. The unexpended balance, if any, of this deposit will be refunded at the close of the session.

OUTFIT.

Apprentices will be required to provide themselves with a proper outfit, particulars of which will be supplied to the successful candidates.

APPLICATIONS FOR ADMISSION.

Application for admission must be made on the prescribed form to be obtained from—

THE DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET, DUBLIN.

The applications will be dealt with in the order of their receipt in the Department's Offices. They should be forwarded not later than 15th August, 1909.

DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND.

THE ALBERT AGRICULTURAL COLLEGE, GLASNEVIN,
DUBLIN.

SESSION, 1909-10.

The Albert Agricultural College is situated on the north side of Dublin in a healthy situation about 170 ft. above the sea level. It is easily reached by tram to the Glesnevin terminus, from which it is distant less than a mile. The College consists of a residence for between fifty and sixty students, together with a farm, orchard, and gardens, all covering an area of about 180 acres.

The College provides two distinct courses of instruction—one for farmers, the other for gardeners. The former or Agricultural Course occupies in the Department's scheme of agricultural education a position intermediate between the instruction given at the Agricultural Stations and that provided by the agricultural faculty of the Royal College of Science, Dublin. The Horticultural Course is intended for selected pupils who are seeking to qualify for the post of Instructor in Horticulture. (For particulars relative to the Horticultural Course see separate leaflet, A 153a.)

AGRICULTURAL COURSE.

This course is intended for young men who desire a technical and practical knowledge of agriculture, to fit them for entrance to the Royal College of Science, Dublin, for becoming farmers, or for engaging in any other occupation—such as creamery management—which requires technical training in the sciences underlying agriculture. It includes instruction in agriculture in the classroom, farm-yard, and fields, supplemented by lessons in dairying, horticulture, poultry management, beekeeping, and veterinary hygiene. The elements of physics, chemistry, botany, zoology, and entomology are taught so far as is necessary to the proper understanding of the principles underlying the most approved farm practice.

Instruction is also given in bookkeeping, surveying, and woodwork, while literature, mathematics, and drawing receive such attention as is found requisite.

Every encouragement is given to the pursuit of athletics and to the development of social intercourse among the students.

The College discussion society meets frequently throughout the session. The papers read before it relate to topics of current interest to the farming community.

The library is supplied with standard works on agriculture, and copies of the best farming periodicals are procured regularly for the students' use.

THE STAFF.—The staff consists of Principal, House Masters, Agriculturist, and teachers of chemistry, botany, zoology, veterinary hygiene, horticulture, dairying, poultrykeeping, beekeeping and woodwork. A competent Drill Instructor attends twice weekly to see to the physical training of the students.

The Clergy of the different denominations also visit the College weekly to give religious instruction. The domestic comfort and bodily health of the students are under the care of an experienced Matron.

THE SESSION.—The course of study extends over at least one session. The session for the year 1909-10 will open on Tuesday, the 12th October, 1909, and end on Friday, the 12th August, 1910. There will be two intervals, each of about a fortnight, during which students will return to their homes—one at Christmas and the other at Easter.

COLLEGE DIPLOMA.—The College diploma is awarded partly on the result of the sessional examinations and partly on the work done throughout the year. It is of two classes, the first being reserved for those students who add to an intelligent grasp of scientific principles a high standard of skill in practical farm work.

Prizes are given by the Department for progress made, for work done, and for services cheerfully rendered to the common weal. These prizes are awarded after consultation with the Principal, and not merely on marks obtained at the examination.

CONDITIONS OF ADMISSION.—Admission to the College is conditional on passing the entrance examination and furnishing evidence of good health and character. Only resident students, who are prepared to stay the whole session and to take the full curriculum, are admitted. They must not be less than 17 nor more than 30 years of age on 1st September, 1909.

The entrance examination will be held in the first week in September, 1909, at four centres situated one in each province. Each applicant for admission will be notified in due course as to the centre at which he will be required to present himself. No expenses will be allowed in respect of attendance.

The subjects included in the examination will be as follows :—

- (1.) *English*, including dictation and composition.
- (2.) *Arithmetic*, including calculations requiring a thorough knowledge of weights and measures, decimal and vulgar fractions, percentages, and interest.
- (3.) *Mathematics*.—The elements of mensuration and algebra to simple equations.
- (4.) *Agriculture*.—The questions on this subject are framed with a view to testing knowledge acquired by practical experience of farm work. No text-book is prescribed or recommended. The examination may be oral as well as written.

FEES.—The fees for tuition, board, residence, laundry, and ordinary medical attendance during the entire session are:—

For students whose parents or guardians derive their means of living mainly from farming in Ireland, . . . £15

For students other than the foregoing, . . . £50

The fees are payable to the Principal in two instalments, viz., one of £10 (or £30) on entrance and the balance on 1st February. In addition to the instalment of the fee payable on entrance, each student must deposit with the Principal a sum of £3 to cover the cost of repairs to clothing, and of books and stationery. The unexpended balance, if any, of this deposit will be returned at the close of the session.

OUTFIT.—Students are required to provide themselves with a proper outfit, particulars of which will be supplied to candidates successful at the entrance examination.

APPLICATION FOR ADMISSION.—Application must be made on the prescribed form, to be obtained from—

THE DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET, DUBLIN.

Applications will be dealt with in the order of their receipt in the Department's Offices. They should be forwarded not later than the 15th August, 1909.

Form A 169 (a).

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

FORESTRY.

NOTICE TO OWNERS OF WOODS AND PERSONS PROPOSING TO FORM PLANTATIONS.

The Department are prepared to afford expert assistance to land-owners and others who may require advice on such matters as "The selection of sites for plantations, suitability of soil, choice of trees, treatment and valuation of existing woods, draining and fencing of woodlands, valuation of timber, growing of osiers, &c."

The Department's Forestry Expert will, so far as time will permit, visit existing woods or lands which it is proposed to plant. In such cases a fee of £2, to cover part of the Expert's expenses, will be charged when the visit does not entail an absence from headquarters of more than three days. For visits extending over a longer period, a

special fee may be arranged, but the Department do not guarantee that more than one complete day will be allowed for each visit. If a visit from the Expert is not required, advice will be given by letter free of charge.

The Department are also prepared to facilitate the planting of small areas by placing at the disposal of persons who propose to form plantations the services of any working foresters who can be spared from the Department's woods for a few weeks in the planting season. The wages and travelling expenses of these foresters must be paid by the persons by whom they are employed.

The undermentioned leaflets on forestry subjects have been issued by the Department, and will be supplied to applicants free of charge:—

- | | | |
|---------|------------|--|
| No. 65. | —Forestry. | —The Planting of Waste Lands. |
| No. 66. | „ | The Proper Method of Planting Forest Trees. |
| No. 67. | „ | Trees for Poles and Timber. |
| No. 68. | „ | Trees for Shelter and Ornament. |
| No. 70. | „ | Planting, Management, and Preservation of
Shelter Belt and Hedgerow Timber. |
| No. 71. | „ | The Management of Plantations. |
| No. 72. | „ | Felling and Selling Timber. |
| No. 73. | „ | The Planting and Management of Hedges. |
| No. 83. | „ | Cultivation of Osiers. |
| No. 94. | „ | Cost of Forest Planting. |

Applications for visits from the Expert or for the services of skilled planters should be made on the form provided for the purpose, and will be attended to as far as possible in order of their receipt in the Department's offices.

Letters, which need not be stamped, should be addressed to

THE SECRETARY,
Department of Agriculture and Technical Instruction,
Dublin.

No. 299-'09.

DEPARTMENT OF AGRICULTURE
AND TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION STREET,
DUBLIN, 1st February, 1909.

ARTIFICIAL MANURES.

SIR,

I have to inform you that the Department desire to direct attention to certain important considerations affecting all those engaged in the retail of artificial manures. It is not sufficiently known that during the last eight years there has been carried out in every county in Ireland a large number of experiments with various mixtures of artificial manures applied to the principal farm crops. These experiments, though not completed, have now yielded results sufficiently definite to be of the greatest importance to farmers, and it is

the desire of the Department that dealers in fertilisers should make the fullest use of this information for their own benefit as well as for that of their customers.

The Department took over three hundred samples of manures from various parts of Ireland during 1908, and, compared with mixtures recommended by the Department on the result of their experiments, many of these manures were of very low quality, and, consequently, very costly. While the Department do not wish to favour any one class more than another, it is but fair to state that the mixtures prepared and sold by the Irish manufacturers were on the whole much more satisfactory than many imported from other countries. Pressure was in several instances brought to bear upon the Department to take action where manures sold were of very low quality, but they have refrained from doing so, believing that local dealers were often acting in complete ignorance of the quality of the goods.

The Department would now appeal to all engaged in the trade to give special attention to the subject during the coming year. If any difficulty is experienced in understanding the technicalities involved in the composition and value of manures, dealers and farmers will be taking a perfectly safe course in insisting on being supplied with the mixtures recommended by the Department, which the principal manure manufacturers in Ireland either have already in stock or are prepared to make up.

The Department are prepared, if a sufficient number of local dealers engaged in the manure trade so desire, to arrange for a short course of instruction extending over one week, in which it should be possible for anyone applying himself to the study of the subject to acquire such a knowledge of the composition, use, and methods of valuing manures as would be of the greatest assistance to him in the conduct of his business.

Enclosed is a memorandum giving particulars of the mixtures which the Department at present recommend on the results of the numerous experiments referred to above. The Department urge upon local dealers to help them and the country by insisting on being supplied with manures manufactured in accordance with these formulæ.

The work of the Agricultural Instructors employed by the Department and the County Committees has brought about a substantial increase in the use of artificial manures, greatly to the benefit of agriculture; but farmers, if they are supplied with a second-rate article at a high price, will, sooner or later, cease to appreciate the benefits resulting from the use of artificial manures, and much of the ground gained in recent years will be lost, both to agriculture and to the artificial manure trade.

The Department deem it also a duty to call the attention of local dealers in manures to the provision in the Fertilisers and Feeding Stuffs Act, directing that invoices shall be given with all manures on which are stated the percentages, if any, of the following ingredients:—

Nitrogen.
Soluble Phosphates.
Insoluble Phosphates.
Potash.

This provision has been too often disregarded. Inspectors will again be sent round this year to take samples, for the information of the Department, with a view to ascertaining the quality and source of the manures sold locally, and instructions will be given to see that invoices are duly supplied in accordance with the Act. Where this requirement is not complied with, action may be taken against the offenders. In this connection it may be stated that in a case last year in which the Department instituted proceedings for failure to give an invoice the defendants were fined £10, and four guineas costs.

I am,

Your obedient Servant,

T. P. GILL,

Secretary.

To the Person or Firm named in the address.

DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND.

MEMORANDUM.

MANURES RECOMMENDED BY THE DEPARTMENT FOR
THE VARIOUS FARM CROPS.

OATS OR BARLEY.

A mixture of

1 part of Sulphate of Ammonia	} which forms a complete manure, having an analysis of	{	2.75 % Nitrogen	} Phos-
3 parts of Superphosphate (35 %)			15.00 % Soluble	
3 parts of Kainit			5.00 % Potash	

To be applied at the rate of 5 cwt. per statute acre.

POTATOES.

A mixture of

1 part of Sulphate of Ammonia	} which forms a complete manure, having an analysis of	{	3.25 % Nitrogen	} Phos-
4 parts of Superphosphate (35 %)			23.00 % Soluble	
1 part of Muriate of Potash			8.00 % Potash	

To be applied at the rate of 5 cwt. per statute acre, along with
15 tons dung.

TURNIPS.

Where a fair quantity of dung of good quality is available it will usually be found sufficient to use along with it 4 or 5 cwt. per statute acre of 85 % Superphosphate.

Where the amount of dung is very limited the following mixture should be applied to this crop at the rate of 5 to 6 cwt. per statute acre.

1 part of Sulphate of Ammonia	} which forms a complete manure, having an analysis of	{	2.5 % Nitrogen
4 parts of Superphosphate (85 %)			17.5 % Soluble Phosphates
3 parts of Kainit			4.5 % Potash

MEADOW HAY.

A mixture of

1 part of Nitrate of Soda	} which forms a complete manure, having an analysis of	{	3.0 % Nitrogen
2 parts of Superphosphate (85 %)			14.0 % Soluble Phosphates
2 parts of Kainit			4.0 % Potash

To be applied at the rate of 4 or 5 cwt. per statute acre.

As these manures (meadow hay mixture) must not be allowed to stand after being mixed together, Agents and Farmers must get the ingredients separately. The manures must then be mixed on the farm and applied to the meadow the same day.

February, 1909.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

(AGRICULTURAL BRANCH.)

VALUATION OF ARTIFICIAL MANURES.

The following Unit Prices have been fixed by the Department for use in comparing the approximate commercial values of manures this season :—

Nitrogen	...	...	...	14/-	per Unit.
Phosphates, soluble in water	...	...	...	2/-	„
*Phosphates, soluble in Citric Acid;	}	or	}	1/4	„
Bone Phosphate					
Potash	...	...	...	4/6	„

* No allowance should be made for Insoluble Phosphates unless from Bone. The Unit Value of Citric Soluble Phosphate in Basic Slag is 1s. 9d.

These Units are based on the retail cash prices of manures in Dublin. When these units are multiplied by the respective percentages, if any, in the analysis of a manure, and 10/- is added for mixing, the result will represent very nearly the *cash price* of one ton of the manure free on rail at Dublin. To ascertain the corresponding price at any other Port, Railway or Canal Station in Ireland, add the amount shown in the list annexed.

No one need pay more than these prices, and, in some instances, manures can be bought at something less; especially is this the case where farmers combine to bulk their orders, or where they buy the ingredients and mix for themselves.

Statement showing the amount which must be added to the Price of Manures in Dublin to represent the cost of the same Manures at the following places:—

A			B		
		Per Ton			Per Ton
Abbeydorney ...	...	Rail 8/9	Bagnalstown ...	...	Rail 7/9
Abbeyfeale ...	...	" 11/1	" ...	...	Canal 7/9
Abbeyleix ...	...	" 7/8	Balbriggan ...	...	Rail 3/9
Achill ...	...	" 10/7	Balla ...	...	" 9/8
Adare ...	...	" 8/10	Ballaghaderreen ...	...	" 10/3
Aghada ...	ex-Steamer	2/6	Ballina ...	...	" 6/3
Aghadowney ...	...	Rail 5/1	Ballinahinch ...	...	" 11/8
Aghalee ...	...	Canal 3/8	(Co. Galway).		
Aldergrove ...	...	Rail 4/2	Ballinamallard ...	...	" 8/5
Annaghmore ...	...	" 5/1	Ballinamore ...	...	" 10/-
Antrim ...	...	" 3/8	Ballinamore ...	...	" 8/5
Ardagh ...	...	" 9/10	(Donegal).		
Ardara Road ...	...	" 9/11	Ballinascarty ...	...	" 5/4
Ardee ...	...	" 4/5	Ballinsloe ...	...	" 8/-
Ardfert ...	...	" 8/4	" ...	...	Canal 7/2
Ardglass ...	...	" 3/9	Ballinass ...	ex-Steamer	6/3
Ardrahan ...	...	" 10/9	Ballincollig ...	...	Rail 3/1
Ardsoil ...	...	" 9/5	Ballinderry ...	...	" 3/4
Arigna ...	...	" 10/9	Ballindine ...	...	" 10/10
Arklow ...	...	" 3/9	Ballineen ...	...	" 6/-
Armagh ...	...	" 5/3	Ballingen ...	...	" 5/5
Armoy ...	...	" 6/5	Ballingrane ...	...	" 9/4
Arva Road ...	...	" 8/6	Ballinbassig ...	...	" 3/2
Askeaton ...	...	" 8/10	Ballinlough ...	...	" 10/2
Athboy ...	...	" 5/5	Ballinrobe ...	...	" 10/9
Athenry ...	...	" 8/8	Ballintogher ...	...	" 8/10
Athlone ...	...	" 7/-	Ballintra ...	...	" 8/9
" ...	...	Canal 6/3	Ballybay ...	...	" 5/9
Athy ...	...	Rail 5/6	Ballybeg ...	...	" 5/3
Attanagh ...	...	" 7/8	Ballybofey ...	...	" 7/4
Attymon ...	...	" 9/7	(Stranorlar).		
Augher ...	...	" 7/10	Ballyboley ...	...	" 5/8
Aughnacloy ...	...	" 7/6	Ballybrophy ...	...	" 6/4
Aughrim (Wicklow) ...	...	" 4/8	Ballybunion ...	...	" 8/9
Aunascaul ...	...	" 10/4	Ballycar ...	...	" 9/10
Aylward's Town ...	...	" 3/4	Ballycarry ...	...	" 3/9

	Per Ton
Ballycastle ... Rail	5/-
(Antrim).	
Ballyclare ... "	2/4
Ballyclare Junc. ... "	2/11
Ballyconnell ... "	9/5
Ballycullane ... "	4/6
Ballycumber ... "	7/4
Ballydehob ... "	8/7
Ballyduff (Cork) ... "	6/6
Ballygawley ... "	7/7
Ballyglunin ... "	9/11
Ballygowan ... "	2/3
Ballyhack ... ex-Steamer	2/6
Ballyhaise ... Rail	7/11
Ballyhale ... "	4/9
Ballyhaunis ... "	10/4
Ballyhooley ... "	6/2
Ballyliffin ... "	5/9
Ballymagan ... "	4/7
Ballymagorry ... "	3/10
Ballymartle ... "	4/1
Ballymena ... "	5/-
Ballymoe ... "	9/7
Ballymoney ... "	4/4
Ballymote ... "	9/-
Ballynahinch ... "	3/11
(Co. Down).	
Ballynahinch Junction ... "	3/2
(Co. Down).	
Ballynashee ... "	7/3
Ballynoe ... "	5/3
Ballynure ... "	5/8
Ballyragget ... "	7/4
Ballyroney ... "	5/3
Ballyshannon ... "	7/6
Ballysodare ... "	7/6
Ballyvary ... "	9/2
Ballyward ... "	5/3
Ballywillan ... "	7/8
Ballywilliam ... "	5/6
Baltimore ... "	7/6
Baltinglass ... "	6/-
Banagher ... "	7/10
" ... Canal	7/3
Banbridge ... Rail	4/2
Bandon ... "	4/11
Bangor (Down) ... "	2/5
Bansha ... "	7/11
Banteer ... "	6/6
Bantry ... "	6/3
Barnagh ... "	10/6
Batterstown ... "	3/4
Bawnboy ... "	10/9
Beauparc ... "	4/1
Bective ... "	4/10
Belcoo ... "	12/-
Belfast ... "	Nil
Bellarena ... "	4/11

	Per Ton
Belleek ... Rail	9/9
Bellurgan ... "	3/10
Belmont ... "	6/6
" ... Canal	6/-
Belmullet ... Steamer	8/9
Belturbet ... Rail	8/4
Bennet's Bridge ... "	5/9
Beragh ... "	7/2
Bessbrook ... "	4/9
Birdhill ... "	9/7
Blackrock (Cork) ... "	3/2
Blackwatertown ... Canal	5/6
Blarney ... Rail	2/10
Blessington ... by Tram	3/4
Boher ... Rail	9/1
Borris ... "	7/-
Boyle ... "	9/6
Bray ... "	2/4
Bridge End ... "	3/2
Bridgetown (Donegal) ... "	8/9
Bridgetown (Wexford) ... "	5/4
Brittas ... "	2/7
Brookeboro' ... "	8/11
Brookmount ... "	2/10
Bruckless ... "	10/4
Bruree ... "	7/4
Bunbeg ... ex-Steamer	6/3
Buncrana ... Rail	4/3
Bundoran ... "	9/9
Bundoran Junc. ... "	8/3
Burnfoot ... "	3/4
Burtonport ... "	6/6
Bush ... "	3/10
Buttevant ... "	6/1

C

Cahir ... Rail	7/-
Cahiriveen ... "	7/6
Caledon ... "	6/1
" ... Canal	5/9
Camolin ... Rail	6/3
Campile ... "	3/4
Cape Castle ... "	6/7
Cappagh ... "	6/4
Cappoquin ... "	5/-
Caragh Lake ... "	10/11
Carberry ... "	5/3
Cargan ... "	9/2
Carlingford ... "	3/9
Carlow ... Canal	6/10
" ... Rail	7/1
Carndonagh ... "	6/-
Carrickfergus ... "	2/3
Carrickhue ... "	3/9
Carrickmacross ... "	4/5
Carrickmore ... "	7/2
Carrick-on-Shannon ... "	8/5
" ... Canal	8/5

Per Ton			Per Ton		
Carrick-on-Suir	... Rail	4/7	Coagh (via Moneymore)	Rail	7/2
Carrigaline	... "	3/8	Coalisland	... "	6/6
Carrigaloe	... "	4/-	"	... Canal	4/9
Carrigans	... "	3/10	Colbinstown	... Rail	5/5
Carrigrohane	... "	2/10	Colebrook	... "	10/10
Carrigtwohill	... "	3/9	Coleraine	... "	2/6
Carrowen	... "	3/10	Collooney	... "	7/1
Carrowmore	... "	9/5	Comber	... "	2/1
Cashel	... "	9/7	Cookstown	... "	7/2
Cashelnagore	... "	6/6	Cookstown Junc.	... "	4/8
Castlebar	... "	8/7	Cootehill	... "	6/6
Castlebellingham	... "	3/7	Corbally	... Canal	3/10
Castleblayney	... "	4/11	Corbet	... Rail	4/9
Castlecaldwell	... "	9/8	Cork	... "	1/3
Castleconnell	... "	9/-	Corofin	... "	9/2
Castledawson	... "	6/3	Courtmacsherry	... "	3/9
Castlederg	... "	7/-	Courtwood	... Canal	5/3
Castlefin	... "	5/1	Craigavad	... Rail	2/1
Castlegregory	... "	9/9	Cratloe	... "	9/5
Castlegregory Junc.	... "	9/-	Craughwell	... "	10/1
Castlegrove	... "	11/-	Cresslough	... "	6/6
Castleisland	... "	9/3	Crew	... "	7/7
Castlemaine	... "	10/-	Crolley	... "	6/6
Castlereah	... "	9/10	Crookstown Road	... "	4/2
Castlerock	... "	4/9	Croom	... "	8/1
Castletown	... "	6/10	Crossdoney	... "	8/4
Castletownberehaven	ex-Steamer	7/6	Crossgar	... "	3/11
Castletownroche	... Rail	6/-	Crosshaven	... "	3/9
Castlewellsan	... "	5/3	Crossroads	... "	8/8
Cavan	... "	8/5	Crumlin	... "	3/11
Celbridge	... "	2/10	Crusheen	... "	9/11
Chapel	... "	4/7	Cullion	... "	3/-
Charlemont	... Canal	5/3	Culloville	... "	4/3
Charlestown	... Rail	11/-	Cullybackey	... "	5/9
Charleville	... "	6/10	Culmore	... "	1/3
Church Cross	... "	7/10	Currafinny	... "	4/4
Church Hill	... "	6/7	Curry	... "	10/6
Clady	... "	4/9			
Clara	... "	7/2			
Clare Castle	... "	7/6			
Claremorris	... "	10/7			
Clashganny	... Canal	6/-			
Clifden	... Rail	10/-			
Cloghan	... "	7/4			
Clogher	... "	8/2			
Cloghroe	... "	3/2			
Clonakilty	... "	5/-			
Clonakilty Junc.	... "	5/4			
Clondulane	... "	5/11			
Clones	... "	7/-			
"	... Canal	7/-			
Clonmany	... Rail	4/11			
Clonmel	... "	4/8			
Clonsilla	... "	1/8			
Cloughjordan	... "	7/10			
Coachford	... "	4/1			
Coachford Junc.	... "	3/1			

D

Dalkey	... Rail	2/11
Delgany	... "	3/4
Derryork	... "	5/7
Dervock	... "	5/8
Desert	... "	5/10
Desertmartin	... "	6/10
Devon Road	... "	11/-
Dingle	... "	7/6
Doagh	... "	2/4
Donabate	... "	3/-
Donaghadee	... "	2/7
Donaghmore	... "	6/1
Donamon	... "	9/4
Donegal	... "	7/6
Donemana	... "	3/-
Donoughmore	... "	4/1
Doonbeg	... "	11/6
Dooniskey	... "	4/8
Dooran Road	... "	9/10

L

		Per Ton	
Downhill	... Rail	4/10	
Downpatrick	... "	3/9	
Draperstown	... "	7/2	
Drimoleague	... "	7/7	
Dripsey	... "	3/7	
Drogheda	... "	1/3	
Dromahair	... "	8/10	
Drominer	... Canal	7/4	
Dromkeen	... Rail	9/3	
Dromod	... "	7/-	
Dromore (Down)	... "	3/8	
Dromore Road	... "	7/9	
Drumfries	... "	5/-	
Drumree	... "	3/6	
Drumshambo	... "	10/9	
Drumsna	... "	9/1	
Drumsurn	... "	5/3	
Duleek	... "	3/7	
Dunadry	... "	3/10	
Dunboyne	... "	2/5	
Duncannon	ex-Steamer	2/6	
Duncormack	... Rail	5/6	
Dundalk	... "	1/3	
Dundrum (Down)	... "	3/9	
Dundrum (Dublin)	... "	1/11	
Dundrum (Tipperary)	... "	8/10	
Dunfanaghy	ex-Steamer	6/3	
Dunfanaghy Rd.	... Rail	6/6	
Dungannon	... "	5/9	
Dungarvan	... "	3/9	
Dungiven	... "	5/10	
Dungloe Road	... "	6/6	
Dunkineely	... "	10/3	
Dunlavin	... "	5/2	
Dunleer	... "	3/10	
Dunloy	... "	6/2	
Dunmanway	... "	6/9	
Dunsandle	... "	9/9	
Durrow	... "	5/6	
Durrus Road	... "	8/1	

E

Edenderry	... Rail	4/
"	... Canal	3/6
Edermine Ferry	... Rail	5/6
Edgeworthstown	... "	7/6
Eglinton	... "	3/-
Embankment (Co. Dublin)	Tram	1/7
Emly	... Rail	8/3
Emyvale Road	... "	7/1
Enfield	... "	4/7
Ennis	... "	7/6
Enniscorthy	... "	3/8
Enniskillen	... "	8/9
Ennistymon	... "	11/4

Per Ton

F

Fahan	... Rail	3/7
Falcarragh	... "	6/6
Farranaleen	... "	6/6
Farranfore	... "	9/1
Farrangalway	... "	4/5
Fenit	... "	7/6
Ferbane	... "	6/8
Fermoy	... "	5/7
Ferns	... "	5/-
Fethard	... "	6/6
Fiddown	... "	4/-
Fintona	... "	7/-
Fintown	... "	8/1
Firmount	... "	3/10
Fivemiletown	... "	8/7
Float	... "	7/5
Florencecourt	... "	11/9
Foxford	... "	8/1
Foxhall	... "	6/2
Fox's Bridge	... "	3/7
Foynes	... "	8/9

G

Galway	... Rail	6/3
Garvagh	... "	5/1
Geashill	... "	6/11
Gibbstown	... "	5/3
Glanworth	... "	6/1
Glarryford	... "	6/3
Glassalough	... "	6/7
Glenavy	... "	3/8
Glenbeigh	... "	11/1
Glenealy	... "	3/4
Glenfarne	... "	11/6
Glenmore	... "	7/2
Glienties	... "	8/7
Glin (Kerry)	ex-Steamer	8/9
Glynn	... Rail	4/4
Goold's Cross	... "	8/11
Goraghtwood	... "	4/5
Goresbridge	... "	7/6
"	... Canal	6/9
Gorey	... Rail	6/1
Gormanstown	... "	3/10
Gort	... "	11/3
Gortalea	... "	8/8
Gowran	... "	6/11
Graigie	... Canal	5/5
Grange	... Rail	3/9
Grange Con	... "	5/8
Greencastle	... "	1/9
Greenisland	... Rail	2/4
Greenore	... "	3/8
Greystones	... "	3/4
Groomsport	... "	2/11
Gweedore	... "	6/5

		Per Ton	
	Rail		
Hamilton's Bawn	...	5/11	
Harristown	...	4/4	
Haulbowline	...	4/-	
Hazlehatch	...	2/10	
Headford Junc.	...	8/6	
Headwood	...	6/10	
Healy's Bridge	...	2/10	
Helen's Bay	...	2/4	
Hilden Siding	...	1/10	
Hill of Down	...	5/5	
Hillsborough	...	3/-	
Hollyhill	...	8/1	
Hollymount	...	11/1	
Hollywood	...	1/7	
Horse & Jockey	...	7/3	
Horseleap	...	7/3	
Howth	...	2/7	

		Per Ton	
	Rail		
Inch	...	5/2	
Inch Road	...	3/4	
Inniskeen	...	3/4	
Inver	...	9/10	
Irvinestown	...	8/5	

		Per Ton	
	Rail		
Jordanstown	...	2/3	

		Per Ton	
	Rail		
Kanturk	...	6/10	
Katesbridge	...	5/1	
Kells (Ballymena)	...	8/5	
Kells (Meath)	...	5/9	
Kells (Kerry)	...	10/6	
Kellswater	...	5/1	
Kenmare	...	7/3	
Kesh	...	8/11	
Kilbeggan	Canal	7/5	
Kilcock	Rail	3/6	
Kilcoe	...	8/2	
Kilcool	...	3/9	
Kilcrea	...	3/7	
Kildare	...	4/11	
Kildysart	...	8/9	
Kilgarvan (Kerry)	...	9/7	
Kilgarvan (Tipperary)	Canal	7/9	
Kilkee	Rail	11/3	
Kilkenny	...	6/4	
Killagahan	...	6/4	
Killala	...	7/6	
Killaloe	...	10/-	
"	Canal	9/8	
Killarney	Rail	9/-	
Killeleagh	...	5/4	
Killeshandra	...	8/9	
Killinick	...	4/8	

		Per Ton	
	Rail		
Killorglin	...	10/7	
Killough	...	3/9	
Killucan	...	5/11	
Killumney	...	3/4	
Killurin	...	4/7	
Killybegs	...	7/6	
Killygordan	...	5/9	
Killylea	...	5/9	
Kilmacow	...	3/4	
Kilmacrennan	...	6/10	
Kilmacthomas	...	4/5	
Kilmainham Wood	...	6/4	
Kilmallock	...	7/4	
Kilmeaden	...	3/7	
Kilmessan	...	4/3	
Kilmorna	...	10/9	
Kilmurry (Cork)	...	3/9	
Kilmurry (Clare)	...	12/1	
Kilrane	...	3/10	
Kilrea	...	5/8	
Kilroot	...	3/1	
Kilrush	...	8/9	
Kilsheelan	...	5/5	
Kiltimagh	...	11/7	
Kingacourt	...	6/5	
Kinsale	...	3/9	
Kinsale Junction	...	3/10	
Knockanally	...	6/10	
Knockcroghery	...	8/11	
Knocklong	...	8/-	
Knockloughrim	...	6/10	
Kylemore	Canal	7/11	

		Per Ton	
	Rail		
Laffan's Bridge	...	7/-	
Laghey	...	8/9	
Lanesborough	Canal	7/11	
Larne	Rail	3/9	
Laurencetown	...	4/7	
Laytown	...	3/7	
Leighlinbridge	Canal	7/7	
Leitrim	Rail	5/3	
Leixlip	...	2/6	
Letterkenny	...	5/6	
Levittstown	Canal	6/1	
Leyney	Rail	9/3	
Limavady	...	4/7	
Limavady Junc.	...	4/2	
Limerick	...	6/3	
Limerick Junc.	...	7/7	
Lisbellaw	...	8/7	
Lisburn	...	1/10	
Lisicooley	...	5/5	
Lisduff	...	8/8	
Lisleton	...	13/2	
Lismore	...	6/11	
Lisnagry	...	9/1	

Per Ton				Per Ton			
Lisnaskea	...	Rail	8/1	Moneymore	...	Rail	7/1
Lispole	...	"	9/7	Monkstown (Cork)	...	"	3/9
Listowel	...	"	10/2	Moorefields	...	"	7/11
Lixnaw	...	"	9/6	Morley's Bridge	...	"	9/4
Lombardstown	...	"	6/-	Mountain Stage	...	"	11/5
Londonderry	...	"	1/3	Mountcharles	...	"	7/6
Longford	...	"	8/-	Mountmellick	...	"	6/4
Loo Bridge	...	"	8/10	"	...	Canal	5/10
Loughgilly	...	"	5/1	Mountrath	...	Rail	7/7
Loughmeala	...	"	9/11	Mountshannon	...	Canal	9/8
Loughrea	...	"	10/-	Mourne Abbey	...	Rail	4/10
Lowtown	...	Canal	4/2	Moville	...	ex-Steamer	2/6
Lucan	...	Rail	2/4	Moy	...	Canal	5/3
Lurgan	...	"	3/8	Moyasta	...	Rail	11/-
Lusk	...	"	3/2	Moycullen	...	"	7/10
Luska	...	Canal	7/4	Muckamore	...	"	4/2
M				Mullafarnaghan	...	"	4/-
Maam Cross	...	Rail	10/9	Mullinavatt	...	"	3/7
Macfin Junc.	...	"	4/7	Mullingar	...	"	6/4
Macmine Junc.	...	"	5/3	Mulroy	...	ex-Steamer	6/3
Macroon	...	"	5/2	Multyfarnham	...	Rail	6/10
Madore	...	"	8/2	N			
Mageney	...	"	6/7	Naas	...	Rail	3/5
"	...	Canal	6/1	Navan	...	"	3/7
Maghera	...	Rail	7/2	Nenagh	...	"	7/4
Magherafelt	...	"	6/6	Newbliss	...	"	6/8
Magheramorne	...	"	4/2	Newbridge	...	"	4/2
Magilligan	...	"	5/3	Newbuildings	...	"	3/2
Maguiresbridge	...	"	8/5	Newcastle (Down)	...	"	3/9
Malahide	...	"	2/1	Newcastle West	...	"	10/1
Malin Head	...	ex-Steamer	2/6	Newcastle (Wicklow)	...	"	3/5
Mallaranny	...	Rail	9/8	Newmarket (Cork)	...	"	7/3
Mallow	...	"	5/4	Newport (Mayo)	...	"	7/6
Manorcunningham	...	"	4/11	Newport Trench	...	Canal	4/2
Manorhamilton	...	"	10/7	New Ross	...	Rail	2/6
Markethill	...	"	5/6	Newry	...	"	2/6
Maryboro'	...	"	6/3	Newtownards	...	"	2/1
Maynooth	...	"	3/-	Newtownbutler	...	"	7/7
Midleton	...	"	3/10	Newtowncunningham	...	"	3/10
Middletown (Armagh)	...	Canal	6/4	Newtownforbes	...	"	8/3
Milford (Carlow)	...	Rail	7/4	Newtownstewart	...	"	5/9
"	...	Canal	6/9	Nobber	...	"	6/-
Milford (Donegal)	...	ex-Steamer	6/3	O			
Millstreet	...	Rail	7/3	Oldcastle	...	Rail	7/-
Milltown (Tuam)	...	"	10/6	Omagh	...	"	6/6
Milltown-Malbay	...	"	12/2	Omeath	...	"	5/1
Mitchelstown	...	"	6/9	Oola	...	"	8/10
Moate	...	"	7/6	Oranmore	...	"	7/7
Mogeely	...	"	4/5	Oughterard	...	"	9/3
Mohill	...	"	9/-	Ovoca	...	"	4/2
Moir	...	"	3/4	P			
"	...	Canal	3/2	Palace East	...	Rail	3/5
Molahiffe	...	Rail	9/4	Pallas	...	"	9/3
Monaghan	...	"	6/3	Parkmore	...	"	7/10
"	...	Canal	6/3	Parsonstown	...	"	7/4
Monaghan Road	...	Rail	6/2				
Monasterevan	...	"	4/9				

		Per Ton
Passage West ...	... Rail	3/7
Patrickswell ...	... "	8/6
Peake ...	... "	3/10
Pettigo ...	... "	9/4
Philipstown ...	... Canal	5/10
Pluck ...	... Rail	5/4
Pomeroy ...	... "	6/8
Portadown ...	... "	3/8
Portarlinton ...	... "	5/-
Portlough ...	... "	4/1
Portrush ...	... "	2/6
Portsalon ...	ex-Steamer	6/3
Portstewart ...	... "	4/3
Portumna ...	... Canal	8/2
Poulaphouca ...	... Tram	3/10
Poyntzpass ...	... Rail	5/1

Q

Queenstown ...	... Rail	3/9
Queenstown Junc. ...	... "	3/5
Quin & Ardsollus ...	... "	9/5
Quilty ...	... "	12/3

R

Raffeen ...	... Rail	3/8
Rahan ...	... Canal	6/4
Ramelton ...	ex-Steamer	6/-
Randalstown ...	... Rail	4/9
Rathangan ...	... Canal	5/3
Rathdrum ...	... Rail	3/1
Rathduff ...	... "	4/1
Rathfriland ...	... "	8/8
Rathkeale ...	... "	9/6
Rathmore ...	... "	7/11
Rathmullan ...	ex-Steamer	6/3
Rathnew ...	... Rail	3/2
Rathvilly ...	... "	6/4
Recess ...	... "	11/7
Redhills ...	... "	7/11
Retreat ...	... "	9/9
Rhoda Bridge ...	... Canal	4/-
Rich Hill ...	... Rail	5/1
Ringaskiddy ...	... "	4/-
Robertstown ...	... Canal	4/2
Rochestown ...	... Rail	3/2
Rockcorry ...	... Rail	6/2
Roskey ...	... Canal	6/10
Roscommon ...	... Rail	9/4
Roscrea ...	... "	8/5
Ross ...	... "	8/10
Rosslare ...	... "	3/9
Rossmore ...	... Canal	7/11
Rosnowlagh ...	... Rail	10/-
Rush and Lusk ...	... "	3/2
Rushbrook ...	... "	4/1

		Per Ton
St. Anne's ...	... Rail	2/10
Saintfield ...	... "	2/7
St. Johnston ...	... "	3/4
St. Mullins ...	... Canal	5/5
Sallins ...	... Rail	3/5
Sallybrook ...	... "	4/10
Scariff ...	... Canal	9/5
Scarva ...	... Rail	5/3
Schull ...	... "	7/6
Shankhill ...	... "	2/4
Shannon Bridge ...	... Canal	7/11
Shannon Harbour ...	... "	6/4
Shillelagh ...	... Rail	6/-
Sionmills ...	... "	4/11
Sixmilebridge ...	... "	9/4
Sixmilecross ...	... "	7/4
Skerries ...	... "	3/8
Skibbereen ...	... "	6/3
Sligo ...	... "	6/3
Smithborough ...	... "	7/6
" ...	... Canal	7/4
Spa ...	... Rail	8/6
Sparrowsland Sdg. ...	... "	4/7
Staffordstown ...	... "	5/5
Stewartstown ...	... "	6/4
Strabane ...	... "	3/4
Stranocum ...	... "	5/11
Stranorlar ...	... "	6/-
Streamstown ...	... "	7/2
Swinford ...	... "	11/6

T

Tallaght ...	... Tram	1/1
Tallow Road ...	... Rail	6/10
Tandragee ...	... "	4/6
Tarbert ...	ex-Steamer	8/9
Templemore ...	... Rail	6/4
Templepatrick ...	... "	3/8
The Lamb ...	... Tram	2/7
Thomastown ...	... Rail	5/4
Thurles ...	... "	6/10
Timoleague ...	... "	4/7
Tinahely ...	... "	5/5
Tipperary ...	... "	8/3
Toome Bridge ...	... "	5/9
Tower Bridge ...	... "	2/10
Tralee ...	... "	6/3
Tramore ...	... "	3/9
Trew & Moy ...	... "	5/6
Trillick ...	... "	8/1
Trim ...	... "	4/11
Tuam ...	... "	10/5
Tubber ...	... "	10/7
Tubbercurry ...	... "	9/5
Tullamore ...	... "	5/10
" ...	... Canal	5/7

Per Ton				W			
Tullow	...	Rail	7/1	Warrenpoint	...	Rail	3/9
Tullymurry	...	"	3/9	Waterfall	...	"	3/2
Tynan	...	"	6/1	Waterford	...	"	1/3
"	...	Canal	5/9	Wellington Bridge	...	"	5/-
U				Westport	...	"	6/3
Upperlands	...	Rail	7/2	Westport Quay	...	"	6/3
Upton	...	"	4/1	Wexford	...	"	2/6
V				Whiteabbey	...	"	1/11
Valentia Harbour	...	Rail	7/6	Whitehead	...	"	3/6
Vernersbridge	...	"	5/3	Wicklow	...	"	1/3
Vicarstown	...	Canal	6/-	Wilkinstown	...	"	5/6
Victoria Bridge	...	Rail	5/2	Woodenbridge	...	"	4/10
Virginia Road	...	"	6/6	Woodlawn	...	"	9/4
				Y			
				Youghal	...	Rail	3/9

The following are examples showing how manures may be valued by means of the Unit Prices given in this leaflet:—

1. Suppose the manure is guaranteed to contain "2.75 per cent. Nitrogen, 15 per cent. Soluble Phosphates, 5 per cent. Potash," its value at Naas would be reckoned thus:—

			£	s.	d.
Nitrogen	... 2.75 per cent.	@ 14/- per Unit	=	1	18 6
Soluble Phosphates	15 "	@ 2/- "	=	1	10 0
Potash	... 5 "	@ 4/6 "	=	1	2 6
Allowance for Mixing	...	...	=	0	10 0
Special Allowance for Naas (see Statement inside)	...	...	=	0	3 5
Value per ton at Naas			...	£5	4 5

2. Suppose the guaranteed analysis is "7 per cent. Citric Soluble Phosphates, 1.45 per cent. Nitrogen," the value of the manure at Macroom would be reckoned thus:—

			£	s.	d.
Citric Soluble Phosphates	7 per cent.	@ 1/4 per Unit	=	0	9 4
Nitrogen	... 1.45 "	@ 14/- "	=	1	0 4
Allowance for Mixing...	...	...	=	0	10 0
Special Allowance for Macroom (see Statement inside)	...	...	=	0	5 2
Value per ton at Macroom			...	£2	4 10

Farmers are advised to consult their County Agricultural Instructor before buying any manure if they are in doubt as to its value.

FORM A 94 (a).

**DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND.**

**EXHIBITS OF IRISH AGRICULTURAL PRODUCTS AT
EXHIBITIONS AND SHOWS IN GREAT BRITAIN AND
IRELAND.**

With the object of assisting Irish Producers in bringing their products under the notice of the Grocery, Provision, and Allied Trades, as well as of the public generally, the Department will from time to time make arrangements with the promoters of Exhibitions held in connection with Grocers' Associations, and of other suitable shows, for space on which to erect stands for the display of Irish agricultural products.

The various articles that may be exhibited on these stands, and the conditions on which such exhibits will be accepted, are set forth in the following regulations, and on Form A 94 (b) which will be issued in respect of each particular show.

REGULATIONS.

(SUBJECT TO MODIFICATION BY THE SPECIAL REGULATIONS ON
FORM A 94 (b))

Articles Exhibited must be Irish Products.

1. All articles offered for exhibition must have been produced or manufactured in Ireland. A declaration to this effect will be required from each exhibitor (see Form A 94). Preference will be given to exhibits of articles in the fostering of the production of which the Department are specially interested, but the Department reserve the right of refusing any application.

Products that may be Exhibited.

2. The following products may be exhibited :—

CLASS	I.—Cream ; Butter ; Cheese ; Condensed Milk ; Dried Milk. (See special conditions (Regulation No. 16) applicable to Exhibits in this class.)
„	II.—Bacon ; Hams ; Lard ; Potted and Tinned Meats ; Sausages ; Meat Soups and Sauces.
„	III.—Bottled, Canned, and Pulped Fruits ; Jams and Jel- lies ; Confectionery ; Pickles.
„	IV.—Cider ; Home-made Wines.
„	V.—Dried Vegetables ; Vegetable Soups.
„	VI.—Eggs ; Honey.
„	VII.—Oatmeal.

- CLASS VIII.—Tinned, Dried, and Preserved Fish.
 „ IX.—Irish-grown Tobacco.
 „ X.—Potatoes (seed or eating).—Seed potato samples to consist of twelve tubers of each variety exhibited, packed in separate bags and named. Eating potato samples to consist of 14 lbs. of tubers, each sample to be named and packed in a new canvas seed bag.
 „ XI.—Oats, seed or feeding—14 lb. samples in new white canvas seed bags.
 „ XII.—Peat Products.
 „ XIII.—Biscuits.
 „ XIV.—Soap.
 „ XV.—Margarine.
 „ XVI.—Fruit (fresh) packed in Standard Packages (see Department's Leaflet, No. 57).
 „ XVII.—Dead Poultry.
 „ XVIII.—Bulbs and Flowers.

Entrance Fees.

3. Entrance fees as specified below will be charged for accepted exhibits; in each case the entrance fee will cover an entire exhibit of any or all of the products in one class, but will not cover an entry in any other class.

Classes	I. to XII. inclusive,	20s. for each Class.
„	XIII. to XV.	40s. „
„	XVI.	5s.
„	XVII.	10s.
„	XVIII.	Terms on application.

Creameries registered under the Department's scheme which have attained a position considered satisfactory by the Department in recent Surprise Butter Competitions will be allowed to enter exhibits in Class I. at a reduced fee of 10s.

Entry fees will not be returned, except when applications are declined.

Tasting Stalls.

4. Arrangements will be made for Tasting Stalls for (1) Butter, Cheese, and Cream; (2) Jams, Jellies, Bottled, Canned, and Pulped Fruits; and (3) Cider and Home-made Wines. Exhibitors may arrange to have a selection of their exhibits of these articles shown on the Tasting Stalls free of charge. Samples for this purpose must be provided free. The Department will provide attendants to show samples for tasting. Representatives of exhibitors will be permitted to use the Tasting Stalls to show their firms' productions.

Special Tasting Stalls.

5. Approved exhibitors, on payment of 40s. extra fee, will, so far as space permits, be allotted floor space for their sole use, in addition to their exhibit on the main Stand, to show, and subject to the special

regulations of the Exhibition authorities, to give, or sell tasting samples of their goods; they must erect and decorate their own Stands on the spaces allotted to them, and provide their own attendants.

Flowers.

6. Flowers, from approved Irish growers, will be displayed on the Stands free of charge if the exhibitors will undertake to supply fresh blooms daily for this purpose.

Forwarding Instructions.

1. All exhibits except Poultry, Cream, and Butter must be delivered at the place of Exhibition not later than 11 o'clock on the week-day preceding the first day of the Show. Exhibits arriving after that hour will not be accepted. Address labels, which will be sent to each exhibitor, must be carefully affixed to exhibits forwarded to the Exhibition. *Exhibits will not be accepted unless carriage is prepaid to the place of exhibition.* For instructions as to forwarding Poultry, see Form A 94 (b).

Care of Exhibits.

8. The Department will take all ordinary care of exhibits, but will not be responsible for any loss or damage which may occur thereto, before, during, or after the Exhibition; nor will the Department be responsible for any financial loss which exhibitors may incur by reason of failure to dispose of exhibits at prices demanded therefor by exhibitors.

Disposal of Exhibits.

9. Exhibitors will be required to state on Form A 94 what they wish to have done with their exhibits at the close of the Exhibition; and if it is desired that exhibits should be sold, a *pro forma* invoice must be supplied when the goods are forwarded, on which should be stated the lowest prices which are to be accepted for the exhibits. Any expenses incurred on account of carriage, cartage, commission, etc., in selling exhibits, will be deducted from the sums obtained, before remitting proceeds to exhibitors. If the Department's representative cannot sell the exhibits at the prices named, or if no instructions are sent as to the disposal of exhibits, they will be returned to exhibitors, carriage forward. This does not, however, apply to perishable exhibits, which will be accepted only on the understanding that they shall be sold during the Exhibition for the best prices obtainable.

Staging.

10. The Department reserve to themselves the right, without assigning any reason, (a) to decline to place any exhibit on the stand, or (b) to remove it if, having regard to its condition, appearance, or for any other reason, it is not considered desirable to expose it; the Department's representative at the Exhibition to be the sole judge in this and any other matters connected with the exhibit. The

Department will arrange for the staging of exhibits. All exhibits will be removed from the Exhibition before the expiration of two days after its close.

Department's Right to Limit or Select Exhibits.

11. The Department reserve the right to limit any exhibit as to size or quantity. If the number of exhibits entered for the Exhibition is more than can be staged, the Department may make a selection from the exhibits, but in doing so they will, as far as possible, consult the wishes of the exhibitors.

Inquiries at Exhibition.

12. The Department's representative will transmit inquiries and distribute Price Lists on behalf of exhibitors, but will not take orders nor quote prices verbally.

Show Cards.

13. Plain white printed cards giving the name and address of each exhibitor will be provided by the Department and placed on exhibits of Eggs and Butter. Show-cards for other exhibits must be provided by exhibitors, and will not be displayed unless approved by the Department. Exhibitors must attach their ordinary labels or brands to the articles sent for exhibition.

Exhibitors' Representatives.

14. Exhibitors are specially requested to have an accredited representative or local agent in attendance to take orders, so that they may derive full benefit from their exhibits. Any agent or representative attending the Department's Stand on behalf of an exhibitor should present a letter to the Department's representative authorising him to do so. In the event of exhibitors being unable to arrange for the attendance of representatives, they should not fail to send price lists for distribution.

Margarine Packages.

15. Margarine must only be exhibited in packages approved by the Department, samples of which must be submitted with Form A 94.

Special Conditions Applicable to Dairy Produce, Class I.

16. (1.) Exhibitors of "Cream" must forward daily a quarter or half-pint sample of fresh cream.

(2.) Exhibitors of "Butter" must forward daily a 1lb. sample, enclosed in parchment and carton. No butter other than these tasting samples should be forwarded.

NOTE.—The samples of cream or butter should be packed in a "wooden" box, and forwarded by parcel or letter post so as to arrive by first post on the morning of each day of the Exhibition.

(3.) Exhibitors of "Cheese" must provide samples for tasting; otherwise one of the cheeses exhibited will be cut for this purpose.

(4.) Exhibitors of "Condensed Milk" or "Dried Milk" must provide samples for examination.

(5) Non-compliance with the above rules will cause the name of the exhibitor to be removed from the Stand.

(6.) An exhibitor of cream may forward one sample of each or any of the following:—

(a) $\frac{1}{4}$, $\frac{1}{2}$, or 1 pint jars, tins, or other vessels (all empty), labelled and sealed as usual, and packed in a non-returnable wooden box.

(b) 5 to 10-gallon "non-returnable" tin (empty), suitable for transit.

(7.) An exhibitor of butter may forward one sample of each or any of the following:—

(a) 112 lb. kiel (empty).

(b) 56 lb. keg (empty).

(c) 56 lb. pyramid box (empty).

(d) 28 lb. pyramid box (empty).

(e) box containing fifty-four 1 lb. cartons (empty).

(f) box containing twenty-four 1 lb. cartons (empty).

(g) box containing twelve 1 lb. cartons (empty).

(h) box containing twenty-four $\frac{1}{2}$ lb. cartons (empty).

(i) a firkin (empty), for farmers' butter made and packed at a farm. (Exporters only may exhibit this package.)

(8) The packages forwarded must, for the sake of uniformity, comply with the specifications for these packages adopted as standards or approved by the Department. Copies of the specifications can be had on application to the Department. Packages of heavy mill-board may be used for (f), (g), and (h).

(9) The packages should be clearly branded on the ends or sides with the name or registered trade mark of the exhibitor, and in the case of butter the kind of butter contained therein should be clearly indicated.

(10.) It is also desirable that the "Irish Trade Mark" should be used in connection with the exhibits.

(11) Cartons to contain butter should have the name or registered trade mark of the exhibitor printed thereon.

Department's Decision Final.

17. In cases of dispute in regard to the interpretation of any of these regulations, or in any matters that may arise in connection with the exhibit, the Department's decision shall be final.

18. Entries for exhibits on the Department's Stand will only be accepted on the understanding that the exhibitor agrees to accept and comply with the above-mentioned conditions and regulations, and with those issued by the Exhibition authorities.

Special Regulations and Conditions. Form A 94 (b).

19. Special regulations and conditions (Form A 94 (b)) will be issued in connection with each Show or Exhibition. Intending exhibitors should read them carefully, and note in what respects the above standing regulations may be thereby qualified.

Form A 94 (b).

DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND.

EXHIBITS OF IRISH AGRICULTURAL PRODUCTS.

SPECIAL REGULATIONS.

The Department have arranged for special stands at the following Exhibitions, viz. :—

The Third Scottish Grocery, Provisions and Allied Trades' Exhibition, to be held at the St. Andrew's Halls, Glasgow, 24th March to 1st April, 1909 (inclusive). The whole of the Berkeley Hall has been taken for the Irish Exhibits.

The Second Sheffield and District Grocers, Bakers, Confectioners and Allied Trades' Exhibition, to be held at the Corn Exchange, Sheffield, 22nd April to 29th April, 1909 (inclusive). A large space in a prominent position has been taken by the Department.

The Bristol and District Grocers and Allied Trades' Exhibition, to be held at the Colston Halls, Bristol, 11th May to 20th May, 1909 (inclusive). The whole of the Lesser Hall has been taken for the Irish Exhibits.

A copy of Form A 94 (a), which contains the General Regulations prescribed in connection with these Exhibitions, is enclosed. *Entries under Classes X., XI., and XVII. (see Regulation 2) will not, however, be accepted for the above Exhibitions.*

Applications for permission to exhibit must be made on Forms A 94, of which copies are transmitted herewith. These forms, duly completed, must be forwarded so as to reach the offices of the Department not later than—

12th March for Glasgow Exhibition.

10th April for Sheffield Exhibition.

1st May for Bristol Exhibition.

Applicants will be advised of the acceptance or otherwise of their entries as soon as practicable after those dates.

II.—TECHNICAL INSTRUCTION.

FORM S. 31.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

SPECIAL EXAMINATION FOR TEACHERS' QUALIFICATIONS IN MANUAL TRAINING (WOODWORK), 1909.

A Special examination for Teachers' qualifications in Manual Training (Woodwork) will be held in Dublin on Tuesday and Wednesday, 22nd and 23rd June, 1909. The subjects and Time Table of the examination will be:—

TUESDAY, JUNE 22nd, 10 a.m. to 1.30 p.m.—Drawing.

„ „ 2.15 to 5.15 p.m.—Theory.

WEDNESDAY, JUNE 23rd, 9.30 a.m. to 1 p.m.—Drawing on the
Blackboard and Demonstration
Exercise.

„ „ 2 to 5 p.m.—Practical Woodwork Test.

For Syllabuses of the subjects of examination, see Circular Letter No. 24.

Tools, wood, paper, pens, and ink will be provided by the Department, but candidates will be required to bring mathematical instruments, drawing boards (imperial size), pencils, erasers, etc., for the examination in Drawing; and, although tools for the Practical Woodwork Test will be provided by the Department, candidates are advised to bring their own, as no allowance can be made should the candidate not consider the tools supplied as satisfactory.

Applicants for admission to the examination must be twenty-one years of age on or before the 1st January preceding the examination.

Application for admission to the examination must be made, on Form S. 32, before the 1st May.

No fee will be charged for this examination, but candidates will be required to defray all travelling and other expenses incurred by them,

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

SUMMER COURSES OF INSTRUCTION FOR TEACHERS, 1909.

The Department will, as in previous years, conduct Summer courses of instruction for teachers as under :—

A.—Courses beginning Tuesday, 6th July, and closing Friday, 30th July :—

- (1) In Experimental Science, in Laboratory Arts, and in Drawing and Modelling, for Teachers in Day Secondary Schools and in Day and Evening Science and Art Classes.
- (2) In Domestic Economy and in Manual Training (Woodwork), for Teachers in Day Secondary Schools.
- (3) In Office Routine and Business Methods, for Teachers of Elementary Commercial Subjects in Technical Schools.
- (4) In Hygiene and Sick Nursing, and in Dressmaking, for Domestic Economy Instructresses.
- (5) In Carrickmacross Lace-making, Crochet Work, Embroidery and Sprigging, for Teachers of these Crafts.

B.—Courses beginning Tuesday, 3rd August, and closing Friday, 27th August :—

- (6) In Rural Economy.
- (7) In Manual Training (Metal Work), in Building Construction, and in Practical Mathematics and Mechanics, for Manual Instructors.

The Courses, except where otherwise stated, will be held in Dublin.

Should the applications exceed the number for which it is proposed to provide accommodation, those applicants will be selected whose admission would appear most likely to prove beneficial. Applications from teachers who have attended short courses of instruction in previous years, and who have been giving instruction in the subjects of those courses during the present session, will have priority of claim for admission to advanced courses.

It is important that teachers should not apply unless they know that they will be able to attend, for much inconvenience, as well as injustice to others, may be entailed by applicants failing to take advantage of admission which may be granted. Failure to attend the course after the invitation has been accepted, will, except in the case of illness, be regarded as an abuse of the privilege; and any teacher failing in this respect will not be admitted to any future course.

Teachers who are selected for, and who attend the courses of instruction regularly and punctually at the specified hours, from the beginning to the end of the course, will be allowed a sum of £8 10s.

towards their expenses while living at the centre; and those who travel more than twenty miles to the centre of instruction will be allowed, in addition, Third Class Railway Fare for one return journey from the railway station nearest their school; no car fares or other travelling expenses will, however, be allowed. These allowances will in no case be made until after the conclusion of the courses.

The hours of attendance will be from 10 a.m. to 4 p.m. daily (with an interval of one hour for lunch), except on Saturdays, when the hours will be from 10 a.m. to 1 p.m. In addition, Teachers will be required in the evenings to write out notes, &c.

Teachers desiring to take advantage of these courses must fill up and return the appropriate form of application (*see below*) as early as convenient, but in any case so as to reach the Offices of the Department not later than the 31st March.

N.B.—These Courses are open only to Teachers who are over eighteen years of age, and who are engaged (a) by Local Committees of Technical Instruction; or (b) in Schools receiving grants either directly from the Department or under the provisions of an approved local Scheme of Technical Instruction.

DETAILS OF THE COURSES.

I. (a)—EXPERIMENTAL SCIENCE.

There may be eleven courses of instruction in Experimental Science.

Subjects:—Second Year of the Preliminary Course; Third and Fourth Year Courses in Physics, Chemistry, Mechanical Science, Botany, and Physiology and Hygiene.

These courses will not only cover the subject matter of the syllabuses of the Department's Programme for Day Secondary Schools; but will aim directly at bringing home to Teachers the intentions of the Department as expressed in the prefatory note thereto.

Provisional recognition to teach the subject of the course will be accorded to those Teachers who have punctually and regularly attended and successfully done the class work, as testified by laboratory note books, and by any examination—written, *viva voce*, or practical—which it may be desirable to hold.

Application for admission to these Courses must be made on Form S 42.

(NOTE.—Summer Courses in the First Year Syllabus and in the Second Year Syllabus of the Preliminary Course will be conducted in alternate years.)

I. (b.)—LABORATORY ARTS.

This course of instruction will be designed specially for those Teachers who have already successfully attended four Summer Courses in Experimental Science, and is primarily intended to give instruction such as will enable those in charge of laboratories to effect simple repairs to common apparatus, and to design and make new

apparatus for lecture illustration, or other special purposes. It will also generally tend to increase the manipulative skill of the Science Teacher.

The Course will include practice in the working of wood, metal, and glass; also instruction in the care and maintenance of tools used in such work. The properties of common materials used in apparatus making will be discussed, in order that teachers may be in a position to draw up correct specifications of special apparatus. Practical work in lantern-slide making, and in the optical projection of apparatus and experiments, will also be undertaken.

The lectures associated with the Course will deal with diagram design and construction; the use of the lantern for demonstration work; the design of laboratories and equipment, &c.

Teachers who have attended punctually and regularly, and in respect of whom the Department receive satisfactory reports, will receive a certificate of satisfactory attendance. Satisfactory attendance at the course in Laboratory Arts will be accepted in lieu of attendance at a fifth Summer Course under the conditions of Section I. (2) of Circular 23.

Application for admission to this Course must be made on Form S 42.

I. (c).—DRAWING AND MODELLING.

This Course is intended primarily for the further training of teachers who hold the Irish Secondary Teachers' Drawing Certificate, or higher certificates. The Department will, however, admit a limited number of teachers in Secondary Schools and Art students who wish to become Teachers of Drawing, but who do not at present possess qualifications as such recognised by the Department. Applicants must show that they have received some previous training in Art subjects, and preference will be given to those who have already obtained some of the successes required for the Irish Secondary Teachers' Drawing Certificate.

The Department do not now grant temporary recognition as Teachers of Drawing in Day Secondary Schools as the result of attendance at the Summer Courses in this subject.

Application for admission to this Course must be made on Form S 147.

II. (a).—DOMESTIC ECONOMY.

This Course will be arranged for Teachers who have already obtained provisional recognition to give instruction in the First and Second Year Syllabuses of the Preliminary Course of Experimental Science, and who desire to obtain recognition as teachers of Domestic Economy in Day Secondary Schools. The course of instruction will include Cookery, the elements of Physiology and Hygiene, and Home Sewing.

Recognition to teach Domestic Economy in Day Secondary Schools during the Session 1909-10 will be given to those teachers who have punctually and regularly attended, and successfully done the class work, as testified by note books and by any examination—written

viva voce, or practical—which it may be desirable to hold. Teachers who successfully attend three Summer Courses in Domestic Economy, under the conditions referred to above, and who teach this subject for two complete sessions to the satisfaction of the Department's Inspectors, will be recognised as qualified to give instruction, in Day Secondary Schools, in the Preliminary Course of the Department's Programme of Experimental Science and in the Syllabuses of Domestic Economy. (See Circular 25.)

Application for admission to this Course must be made on Form S 42.

II. (b.)—MANUAL INSTRUCTION (WOODWORK).

The Course of Manual work will include instruction in Drawing, in addition to practical instruction in the use of Woodworking tools, and will provide for the further training of Teachers who at present teach this subject in Day Secondary Schools, or who will be so engaged during the forthcoming session. Examinations will be held at the conclusion of the Course, and Teachers who succeed in passing these examinations will, for the present, be accepted as qualified to give instruction in the subject under the Department's Regulations for Day Secondary Schools, subject to the conditions of Circular 24.

Applications for admission to this Course must be made on Form S 42.

III.—OFFICE ROUTINE AND BUSINESS METHODS.

This Course is intended for Teachers in Technical Schools who are giving instruction in such subjects as Shorthand, Commercial Correspondence, Commercial Arithmetic, and Book-keeping. The Course of instruction will include instruction in Business Methods and the Keeping of Accounts. It will also include the routine methods and operations common in office work. Reference will be made to the equipment required for classes in Elementary Commercial subjects, and to the methods of conducting such classes. An examination will be held at the close of the Course.

Applications for admission to this Course must be made on Form S 43.

IV. (a.)—HYGIENE AND SICK NURSING.

This Course is intended for Teachers of Domestic Economy at present engaged under Local Authorities.

The object of the Course is to provide facilities for these teachers to obtain further practical knowledge of the laws of health, and of home nursing, so as to enable them to introduce into their Courses simple and well-directed instruction, for which it is felt there is great need.

The Course will include only as much Human Physiology as is necessary for the proper understanding of the laws of health, and will deal largely with rural and personal hygiene, and with the care of the young and of the sick in their own homes. Instruction in First Aid to the Injured will also form part of the Course.

The instruction will include practical work, and an examination will be held at the close of the Course.

Applications for admission to this Course must be made on Form S 146.

IV. (b.)—DRESSMAKING.

This Course will be arranged for those Teachers of Domestic Economy, at present engaged under Local Authorities, who are already recognised by the Department as Teachers of Needlework. An examination will be held at the close of the Course.

Applications for admission to this Course must be made on Form S 146.

V.—COURSE OF INSTRUCTION FOR TEACHERS OF CARRICKMACROSS LACE-MAKING, CROCHET WORK, EMBROIDERY, AND SPRIGGING.

The object of the present Course is to improve existing kinds of work, and not to introduce new forms. The instruction will be confined to Carrickmacross Lace-making, Crochet Work (Clones and Raised), Embroidery, and Sprigging.

The lessons on each of these subjects will include instruction in technique, the use of suitable materials, the preparation of working tracings, and of drawings from rubbings of crochet. In the case of those capable of profiting by such form of instruction, practice in Design will also be afforded. Special instruction will be given in the artistic arrangement of traditional details ordinarily used by crochet workers. Exercises will be given in which the actual units will be employed, and drawings will be made from such arrangements as prove satisfactory: these exercises will form an important part of the Course. Instruction will also be given in the keeping of Accounts of Industries Classes.

Certificates will be awarded at the close of the Course to those who have attended regularly and worked well, and whose work is of a sufficiently high standard, as shown by the specimens produced during the class-lessons, and by any tests of a written or practical character which it may be considered advisable to apply.

This Course will probably be conducted at the Crawford Municipal School of Art, Cork.

Applications for admission to this Course must be made on Form S 140.

VI.—RURAL ECONOMY.

A Course of instruction in Elementary Science suitable for rural schools will be conducted during the month of August. The Course is intended primarily for teachers in Technical Schools who have been recognised as eligible to conduct classes in the First and Second Years' Syllabuses of Elementary Science (Teachers) under the conditions of the Department's Circular Letter, No. 59.

Examinations, written and practical, will be held at the close of the Course, and those teachers in Technical Schools who have

punctually and regularly attended the Course and pass these examinations will be recognised as qualified to give instruction in the subject to Teachers' Classes conducted under the conditions of Circular 59.

As far as the accommodation will permit, the Department are prepared to admit to the Course, National School Teachers who are recognised by the Commissioners of National Education as eligible to give instruction in the Syllabuses of Elementary Experimental Science of the Programme for National Schools.

The object of the Course is to enable teachers, already qualified in the manner referred to, to illustrate the application of scientific principles to the study and explanation of the natural facts of rural life. The instruction will be largely practical in character, and will involve out-door work. It will deal with such phenomena as the surface forms of the country; the weather; the origin and nature of rocks and of soils; the structure, growth and conditions for healthy existence of plants; the distribution of types of vegetation; the structure and habits of common animals, and the making of a "Nature Calendar."

Applications for admission to this Course must be made on Form S 42.

VII. (a).—MANUAL TRAINING (METAL WORK).

This Course is intended for the further training of Manual Instructors who are at present under engagement to Local Committees of Technical Instruction. Examinations will be held at the close of the Course, and Instructors who attend satisfactorily and pass these examinations will be granted provisional certificates of recognition as teachers of Manual Training (Metal Work) under the conditions of Circular 24.

Applications for admission to this Course must be made on Form S 147.

VII. (b).—BUILDING CONSTRUCTION, AND PRACTICAL MATHEMATICS AND MECHANICS.

These Courses are also intended for the further training of Manual Instructors. A certificate of satisfactory attendance and progress will be issued to those who are favourably reported upon by the Instructors-in-charge; but it is not the intention of the Department to issue Teachers' Certificates on the results of the Courses. Instructors attending the Courses will be expected to sit for the Board of Education's Local Examinations, to be held in May, 1910.

Applications for admission to this Course must be made on Form S 147.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

SUMMER COURSES OF INSTRUCTION TO MEMBERS OF ENCLOSED RELIGIOUS ORDERS, 1909.

The Department will, during the months of July and August, conduct Summer Courses of Instruction for Teachers of Experimental Science, Drawing, and Domestic Economy.

In all cases in which the Department grant the services of expert Instructors, compliance with the following conditions will be required :—

(1.) That the Convent authorities provide accommodation, and all necessary apparatus and materials required for the Courses.

(2.) That arrangements will be made, as far as possible, for the admission of Teachers from other Convents, who may apply for a course of instruction at the centre.

(3.) That none but members of Religious Orders, who are actually engaged in teaching in Day Secondary Schools in receipt of grants from the Department, will be admitted.

(4.) That all expenses incurred by Teachers attending the courses shall be defrayed by the authorities of the Convents in which they teach.

The Courses will, as a rule, begin on the 6th July and close on the 30th July; but, should these dates be not suitable, the Department will be prepared to consider applications for courses to begin on the 3rd August and close on the 27th August.

The hour of attendance will be from 10 a.m. to 4 p.m. daily (with an interval of one hour for lunch), except on Saturdays, when the hours of attendance will be from 10 a.m. to 1 p.m. In addition, Teachers will be required in the evenings to write out notes, etc. The Department are prepared to consider applications for alternative arrangements provided they allow of an equal period of teaching.

Teachers who wish to attend the Courses must fill in Form S. 142, and forward it to the Department through the Superioress of the Convent at which it is desired that they should attend.

DETAILS OF THE COURSES.

EXPERIMENTAL SCIENCE.

The subjects of the Courses of instruction will be:—First and Second Years of the Preliminary Course; Third and Fourth Year Courses in Physics, Chemistry, Botany, and Physiology and Hygiene.

These Courses will not only cover the subject matter of the Syllabuses of the Department's Programme for Day Secondary Schools; but will aim directly at bringing home to Teachers the intentions of the Department as expressed in the prefatory note thereto.

Provisional recognition to teach the subject of the Course will be accorded to those Teachers who have punctually and regularly attended and successfully done the class work, as testified by laboratory note books, and by any examination—written, *viva voce*, or practical—which it may be desirable to hold.

(NOTE.—Applications for Courses in the First Year Syllabus and in the Second Year Syllabus of the Preliminary Course will be entertained only in alternate years).

DRAWING AND MODELLING.

This Course is intended primarily for the further training of teachers who hold the Irish Secondary Teachers' Drawing Certificate, or higher certificates. The Department will, however, admit a limited number of teachers who wish to become teachers of Drawing, but who do not at present possess qualifications as such recognised by the Department. Applicants must show that they have received some previous training in Art subjects, and preference will be given to those who have already obtained some of the successes required for the Irish Secondary Teachers' Drawing Certificate.

The Department do not now grant temporary recognition as Teachers of Drawing in Day Secondary Schools as the result of attendance at Summer Courses in this subject.

DOMESTIC ECONOMY.

This course will be arranged for Teachers who have already obtained provisional recognition to give instruction in the First and Second Year Syllabuses of the Preliminary Course of Experimental Science, and who desire to obtain recognition as teachers of Domestic Economy in Day Secondary Schools. The Course of instruction will include Cookery, the elements of Physiology and Hygiene, and Home Sewing.

Recognition to teach Domestic Economy in Day Secondary Schools during the Session 1909-10 will be given to those teachers who have punctually and regularly attended, and successfully done the class work, as testified by note books and by any examination—written *viva voce*, or practical—which it may be desirable to hold. Teachers who successfully attend three Summer Courses in Domestic Economy under the conditions referred to above, and who teach this subject for two complete sessions to the satisfaction of the Department's Inspectors, will be recognised as qualified to give instruction, in Day Secondary Schools, in the Preliminary Course of the Department's Programme of Experimental Science and in the Syllabuses of Domestic Economy. (*See Circular 25.*)

FORM S. 261.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION STREET,
DUBLIN, *February, 1909.*

DRAWING AND MANUAL WORK IN PRIMARY SCHOOLS.

SIR,

The arrangements in regard to the submission of Time-Tables of classes in Drawing and Manual Work in Primary Schools have been revised, and the period in respect of which returns will in future be made will be the school year beginning with the first day of the month in which the annual examination is held.

Copies of Form S. 49, on which the Time-Table of the classes at the above-named school should be submitted, are enclosed herewith. It is requested that two copies of the form, completed in respect of the current school year, may be returned to these Offices with as little delay as possible.

I am,

Sir,

Your obedient Servant,

T. P. GILL,
Secretary.

CIRCULAR 61.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION STREET,
DUBLIN, *December, 1908.*

SIR,

Under Section XII. of the Regulations for Technical Schools and Science and Art Schools and Classes, provision has been made for the issue of certificates to students who have followed satisfactory courses of instruction extending over not less than two years of specialisation. The certificates must be prepared locally and the Department have undertaken to affix their stamp as an authoritative recognition.

Designs for certificates have been submitted to the Department by several Technical Instruction Committees, and the proposals have, in some cases, not been approved, as the certificates, which the Department were asked to stamp, contained information which could not be verified in these Offices.

In order that Technical Instruction Committees may be made aware of the Department's views in regard to the manner in which certificates of this nature should be drawn up, and that the arrange-

ments made in the different localities may be as uniform as possible, it has been thought desirable to issue a draft of an approved form. Details of an arrangement which the Department would regard as satisfactory are printed on the back hereof.

I am,
Sir,
Your obedient Servant,

T. P. GILL,
Secretary.

FRONT OF CERTIFICATE.

THIS IS TO CERTIFY that.....
has satisfactorily followed a course of Instruction in.....
extending over a period of.....years.

(This space should be reserved for the Department's stamp.)Chairman.
.....Principal.
.....Date.

Particulars of the course of instruction followed are given on the back hereof.

BACK OF CERTIFICATE.

(Here will appear such particulars of the course followed, examination successes, etc., as the Managers may desire to give).

.....Principal.
.....Date.

CIRCULAR 62.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION STREET,

DUBLIN, February, 1909.

SIR or MADAM,

I have to forward herewith, for the information of your Managers, copy of a Report furnished to the Department by one of their Officers who visited certain of the Lace and Sprigging Classes in Ireland during the year 1908.

The Report, it will be observed, deals mainly with the systems of Book-keeping and general organisation, and the methods of business employed in the conduct of the classes—matters of vital importance in connection with industrial undertakings.

The Department have, from time to time, made special efforts to demonstrate the necessity of keeping, in a systematic manner, accurate accounts of all transactions arising from the management of Industries, and it will be within your recollection that, in October, 1906, they issued a set of Account Books suitable for the purpose. They regret, however, to find that, notwithstanding the special instructions which were also issued, the books have not, in many instances, been utilised to the fullest extent, and it, therefore, seems desirable again to direct attention to the fact that unless modern business methods are adopted, success in the Industries cannot be attained.

The Department trust that the accompanying Report will receive careful consideration.

A further copy of the instructions for keeping the Account Books is also enclosed.

I am,
Sir or Madam,
Your obedient Servant,

T. P. GILL,
Secretary.

REPORT ON THE BOOK-KEEPING, ORGANISATION AND BUSINESS METHODS OF SOME OF THE LACE AND SPRIGGING CLASSES IN IRELAND.

BOOK-KEEPING SYSTEM.

A few of the small sets of Account Books drawn up by the Department for the use of the Industries Classes were well and intelligently kept. The majority of the Manageresses, however, in spite of the printed instructions issued with the books, had extremely vague ideas as to the exact purpose of them. In many cases the books were written up every week, or fortnight, often from memory, and in one or two cases they were allowed to lie blank for at least a month, and often more.

The books have not generally been kept in such a manner as to show the amount of stock in hand, the debts due to the industry, the sales, and the amounts due to workers. This information can be obtained directly from the General Wages and Sales Book by using what is known as the "Progressive Column" system. Most of the Manageresses have ignored this, and have only entered an item into this book when the transaction had run its course, *i.e.*, when the amount was finally handed over to the worker. Instead of this each entry should progress across the book column by column. It should be commenced and carried as far as "Description of Article" when the piece of work is (1) handed in, continued across the book when it is (2) sold and despatched, still further continued when the amount is (3) received from purchaser, and (4) when the worker is paid. In all, four separate stages. Stage 1 should also be noted in the Workers' Pass Book, in the "Date when Finished" column.

This "Progressive Column" system gives the state of affairs of an industry at any moment. The stock of work on hand, for example, is obtained by collecting all those entries running across the General Wages and Sales Book as far as the "Description of Article" column, and the list of Sundry Debtors is easily made up by extracting the entries which lie blank in the "Received from Purchaser" column.

Too little attention has been paid to obtaining the Workers' signatures in the Workers' Pass Book. In some books the signature column was a blank, and in one instance the Manageresses had been in the habit of signing the Workers' names herself.

Very few Manageresses give any thought to the importance of finding and verifying the Cash Balance on hand from time to time. Many of them pay no attention whatever to this point, and, consequently, have no idea whatever of the balance (if any) they should have in hand. In rare cases only is the Industry Cash kept quite separate from personal cash. If cash runs short, money on account is advanced to tide things over, usually from the Manageress's own pocket.

In the General Wages and Sales Book, while one or more entries lying blank in "Received from Purchaser" column (representing goods not yet paid for) can keep back the totalling of this column at the end of each month (or other suitable closing period); this difficulty can easily be got over by carrying forward all such entries afresh into the commencement of a new period. The total receipts for the period can then be inked in and closed off. This also applies to the "Paid to Workers" column.

Proper accommodation for the storing of books, registers, letters, thread, etc., is provided in very few cases only. The want of this creates much confusion and annoyance, as the Manageress is obliged either to carry all her books and papers backward and forward to her own residence, or else leave them wrapped up in a corner of the classroom.

BUSINESS METHODS AND ORGANISATION.

Goods which are being despatched from the class are too often packed in anything which happens to be lying at hand: newspapers, soiled wrapping paper or an old cardboard box often being used for the purpose. Invoices and receipts are frequently not sent out; letters going out are badly written on any kind of paper and words are misspelt. Letters of inquiry, too, are often left unanswered for days or weeks. All this, of course, irritates inquirers and customers.

Letter, Invoice, and Receipt Books should be used in all the lace and sprigging industries.

The system of deducting 1d. from every 1s. payable to Workers to cover general expenses is now very general in certain counties. The Workers objected to it at first, and many of them took their work away to local lace dealers in consequence. They soon, however, returned to the classes.

The system works very well, and raises a sum sufficient to cover the working expenses.

Besides raising a sum to pay working expenses, the deduction is intended to build up by degrees a small reserve, out of which sums

on account can be advanced to workers pending the arrival of the cheque from the purchaser. According to the analysis of receipts and expenses made for each industry this reserve fund should be quite possible. The books show, in most cases, a small balance in hand, but in few cases did it agree with the actual cash in hand. Indeed, in some cases, where the books showed a balance, Manageresses declared that they had no cash belonging to the industry in hand at all. Most Manageresses, unfortunately, mix the industry cash with their own, and depend on luck and memory to keep them right.

RECOMMENDATIONS AND SUGGESTIONS.

Totalling.—The page totals should be carried forward regularly, and a Grand Total struck (a) once a month in the case of fairly large industries, or (b) once every 3, 6, or 12 months in the case of small industries. The outstanding debts should be carried forward to the new period.

Workers' Numbers.—Workers' numbers should be consecutive; newcomers being given any numbers lying untenanted.

Instructions.—The printed instructions sent out by the Department with each set of books should be pasted on the inside cover of each book, to prevent their being mislaid.

Correspondence Books.—Invoice Books and Letter Books on the carbon principle, and Counterfoil Receipt Books should be used by every industry.

Packing of Goods.—Proper wrapping paper should be used for parcels of goods, and tie-on or adhesive labels should also be used. These might have the name and address of the industry printed on them.

CIRCULAR 63.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION STREET,
DUBLIN, March, 1909.

SIR,

With reference to the Conference of representatives of Technical Instruction Committees, held at the Royal College of Science, Dublin, on the 6th February, in regard to the question of courses of instruction to be provided in Technical Schools under the Regulations for Technical Schools and Science and Art Schools and Classes, I have to inform you that the Department do not propose to issue a report of the proceedings.

Having regard, however, to the importance of the discussions which took place, the Department think it advisable to bring before the notice of Committees, in the memorandum printed, a summary of the principal points which were under consideration.

I am,

Sir,

Your obedient Servant,

T. P. GILL,
Secretary.

To the Secretary of the
Committee named in the address.

MEMORANDUM.

I.—*Syllabuses of Instruction.*

School Authorities should prepare Syllabuses of the different subjects of instruction, so arranged as to extend over a period of three or four years. The portion of the Syllabus to be included in a course for any one year should be such that it may be covered in one school session by the student of average ability.

II.—*The Constitution of Courses of Study.*

In future the Department will require, as a rule, that one main subject will be continued throughout each student's course of study. The instruction received in this main subject, as well as in other subjects approved as part of the course, will be eligible for grants at the rates appropriate to the year of specialisation of the student.

III.—*Courses of Study for Female Students.*

In courses for women, where a student adopts a course of study in which the main subject is a subject other than in Domestic Science, and which complies with the minimum requirements as to the number of subjects to be taken, the Department will allow grants in respect of instruction in Domestic Science, provided that not more than three subjects in all are taken in any year.

NOTES AND MEMORANDA.

A meeting of the Agricultural Board was held at the offices of the Department, Upper Merrion-street, Dublin, on Tuesday, the 30th March, 1909. The following were present:—The Right Hon. T. W. Russell, M.P., P.C., Vice-President of the Department, in the chair; Mr. Alexander L. Clark, J.P.; Very Rev. Canon Daly, D.D.; Mr. Robert Downes, J.P.; Colonel N. T. Everard, R.M.L.; His Grace Most Rev. John Healy, D.D., Lord Archbishop of Tuam; Most Rev. Denis Kelly, D.D., Lord Bishop of Ross; Mr. William M'Donald, J.P.; Mr. H. de F. Montgomery, D.L.; and Mr. P. J. O'Neill, J.P.

Mr. T. P. Gill, Secretary of the Department; Mr. J. R. Campbell, B.Sc., Assistant Secretary in respect of Agriculture; Mr. W. G. S. Adams, M.A., Superintendent of the Statistics and Intelligence Branch; Mr. J. P. Walsh, Clerk in Charge of Accounts; Mr. J. D. Daly, M.A. (who acted as secretary to the meeting); and Mr. J. V. Coyle were also present.

The Board had the following, amongst other, matters under consideration:—The Department's work in connection with congested districts; **Progress of County Agricultural Schemes**; Work of the Department's Agricultural Schools and Stations; Winter Dairying; Exhibitions of Irish produce in Great Britain; Flax Growing; Tobacco Growing; Forestry; Proposals relating to Marine Works and Inland Fisheries.

A Conference between Officers of the Department and Representatives of Technical Instruction Committees having schools working under the Department's Regulations for Technical Schools and Science and Art Schools and Classes, was held at the Royal College of Science, Dublin, on Saturday, the 6th February, 1909. The Conference was specially convened by the Department for the purpose of discussing the question of courses of study to be provided for students in Technical Schools. The Regulations require that organised courses of study, based upon local industrial conditions, should be drawn up by the Managers of all Technical Schools conducted in connection therewith, and grants are payable only in respect of students who follow systematic courses in two or three subjects designed to extend over three or four years.

Technical Instruction Committees have had some difficulty in preparing such courses, particularly in districts where special industrial activities do not exist, and where, in consequence, the needs of the students differ considerably. It appeared to the Department, therefore, that much good would result from a free discussion of the difficulties by the persons interested.

The Conference was presided over by Mr. T. P. Gill, Secretary of the Department, who, in a brief statement, explained the requirements of the Regulations, and the steps which should be taken by the Committees in order to secure the fullest benefits therefrom. The discussion was continued by Mr. Fletcher, the Department's Assistant Secretary in respect of Technical Instruction; the Most Reverend Dr. Browne, Lord Bishop of Cloyne; Messrs. Bradley (Tyrone), Webb (Clonmel), Holden (Newry), Mercier (Belfast), Stanley (Belfast), Bøddicker (King's Co.), Pyper (Bangor), McAreavy (Newry), Hardman (Coleraine), McDonnell (Galway), Pettigrew (Ballymoney), Barclay (Ballymena), Carroll (Warrenpoint), Barrie (Londonderry), Glasgow (Tyrone), Wake (Wicklow), O'Shaughnessy (Waterford), and other delegates.

The following include the principal points which were under consideration, and the conclusions arrived at will form a basis for action by the Department.

I. *Syllabuses of Instruction*:—School Authorities should prepare Syllabuses of the different subjects of instruction, so arranged as to extend over a period of three or four years. The portion of the Syllabus to be included in a course for any one year should be such that it may be covered in one school session by the student of average ability.

II. *The Constitution of Course of Study*:—In future the Department will require, as a rule, that one main subject will be continued throughout each student's course of study. The instruction received in this main subject, as well as in other subjects approved as part of the course, will be eligible for grants at the rates appropriate to the year of specialisation of the student.

III. *Courses of Study for Female Students*:—In courses for women, where a student adopts a course of study, in which the main subject is a subject other than in Domestic Science, and which complies with the minimum requirements to the number of subjects to be taken, the Department will allow grants in respect of instruction in Domestic Science, provided that not more than three subjects in all are taken in any year.

The undermentioned Technical Instruction Committees were represented at the Conference:—

COUNTY BOROUGH COMMITTEES:—*Dublin*, John Ryan; *Belfast*, Councillor Mercier, Professor Stanley; *Londonderry*, Sir J. B. Johnston, G. E. Armstrong; *Limerick*, Charles Close, James Comerton; *Waterford*, B. O'Shaughnessy.

URBAN DISTRICT COMMITTEES:—*Armagh*, James Lennon, John Caffrey; *Athlone*, R. Baile, P. V. C. Murtagh; *Ballymena*, Robert Barclay, P. F. Gillies; *Ballymoney*, Rev. A. H. Dill, James Pettigrew; *Banbridge*, W. R. Johnston, H. McShane; *Bangor*, Thomas E. McConnell, John Pyper, Joseph Rea; *Blackrock*, T. J. Hayes, T. A. W. Hill; *Bray*, T. J. Keane; *Carrickfergus*, James B. Craig, W. B. Jamison; *Clonmel*, James Cahill, Cecil Webb; *Coleraine*, David Hardman; *Drogheda*, Dr. W. Bradley, J. B. Connolly, Edward Daly; *Galway*, Rev. J. Clarke, D.D., Clement J. Leaper; *Kingstown*, John Rochford, R. Macdonald; *Larne*, T. L. Price, T. Clearkin; *Lurgan*, Dr. Samuel Agnew, W. J. Lark; *New Ross*, John S. Hearn, Thomas Lungley; *Newry*, J. J. McAreevy, E. Holden; *Newtownards*, Alexander Dickson, Philip A. Cole; *Pembroke*, John Good, C. P. Coote Cummins; *Portadown*, James G. Edwards, Henry Richardson; *Rathmines and Rathgar*, Francis McBride, C. H. Oldham; *Sligo*, Rev. Dr. Cummins, Geo. H. Smith; *Tipperary*, Richard Ronan, P. J. Flynn; *Tralee*, M. Griffin, H. O. Armstrong; *Warrenpoint*, Joseph Carroll, Thomas Pettit; *Wexford*, Joseph S. Thompson, E. Lousley.

COUNTY COMMITTEES:—*Clare*, M. Tierney, M. O'Dea; *Cork*, Most Rev. Dr. Browne, Bishop of Cloyne; J. M. Buckley; *Fermanagh*, Rev. J. E. McKenna, Thomas Plunkett; *Galway*, John C. Macdonnell, D. F. Burke; *Kerry*, M. J. Nolan, M. Reidy; *Kildare*, Rev. John Logan, M.A., LL.D., Albert L. Favell; *Kilkenny*, W. F. Houghton, G. T. Phillips; *King's County*, D. A. Mulcahy, O. Boeddicker, E. J. Delahunty, T. J. Hurley; *Londonderry*, Hugh T. Barrie, William D. Cousins; *Louth*, H. H. Macdonnell, A. E. Easthope; *Meath*, Col. Everard, J. J. Gallen; *Queen's County*, Rev. Brother Lynch, P. J. O'Neill; *Tipperary N.R.*, Leo. J. Tapp; *Tipperary S.R.*, Rev. N. Walsh, P. J. Dalton; *Tyrone*, H. L. Glasgow, L. Bradley; *Westmeath*, P. J. Lyons; *Wicklow*, Rev. Thomas J. Graham, Richard Wake.

At the Falcarragh (County Donegal) Petty Sessions on the 19th January, the masters of the steam trawlers, **Heavy Fines for Illegal Trawling.** Lucerne, Akranes, and Lizzie, of Fleetwood, and Stoic, of Grimsby, were fined £50, with £5 costs, each, for illegal fishing in the neighbourhood of Tory Island. The master of the ss. Connie, of Fleetwood, which vessel was detected fishing in the prohibited areas on two occasions, was fined £50, with £5 costs, for each offence.

At Carlingford (County Louth) Petty Sessions on the 18th February, the master of the ss. "Earl Hereford," of Great Grimsby, was prosecuted by the Department of Agriculture and Technical Instruction for Ireland for trawling off County Louth in contravention of the Department's By-law.

A fine of £15 (with costs, £20 10s. 0d.) was imposed, and the net of the vessel was ordered to be forfeited.

At Dungarvan (County Waterford) Petty Sessions, on the 20th February, the master of the ss. "Marion," of London, was prosecuted by the Department of Agriculture for trawling off the coast of County Waterford in contravention of the Department's By-Law. A fine of £50 (with costs £20 10s. 3d.) was imposed.

At the Falcarragh (County Donegal) Petty Sessions on the 2nd March, the master of the ss. "Ephraim," of Fleetwood, was prosecuted by the Department of Agriculture and Technical Instruction for Ireland for trawling in the neighbourhood of Tory Island in contravention of the Department's By-Law. A fine of £25, with costs £60, was imposed.

According to a recent Consular Report (col. 3737-232-1908) relating to the consular district of Gothenburg, in Sweden, **Swedish Poultry and Egg Industry.** it appears that the production of poultry and eggs has developed greatly. Indeed, it has become a most important item to the agricultural and small farm population of the district. Egg-collecting and packing stations have been established, and associations have been formed for the protection of mutual interests, and for the exchange and spreading of information on such subjects as home sale, export, and the most advantageous market. The Consul reports that these associations have been conducted with foresight and ability, and have shown excellent results,

It appears from a recent Consular Report on the Trade of Sweden (col. 4446-1-1908) that tobacco is cultivated in the cantons of Vaud and Fribourg. In 1906 the net weight of the production amounted to 563 tons, which realised 13,600*l.* This, however, is a much smaller result than in the year 1905, when the crop produced 974 tons (value 25,500*l.*). The figures for 1907 are not yet published, but reports state that the crop was again small and was quickly sold at high prices. The quality was better than in the previous year; the leaf is lighter, burns well, and is especially adapted for the manufacture of cigars. Prices for Vaud tobaccos fluctuated between 1*l.* 10*s.* and 1*l.* 13*s.* per cwt., which are unprecedentedly high.

The first of this season's competitions was held on the 31st March, 1909. The judges were two in number, being representative butter merchants of Cork and Glasgow. Prizes were awarded to the undermentioned competitors:—Moneymore Co-operative Agricultural and Dairy Society, Ltd., Omagh Co-operative Agricultural and Dairy Society, Ltd., Kantoher Co-operative Agricultural and Dairy Society, Ltd., Donalong Co-operative Agricultural and Dairy Society, Ltd., Knockavardagh and Moyglass Co-operative Creamery and Butter Factory Co., Ltd.

A special additional prize of 10*s.* was awarded to the dairymaid at the creamery obtaining the First Class Prize.

**Surprise
Butter
Competitions,
1909.**

STATISTICAL TABLES.

FISHERY STATISTICS—

STATEMENT of the Total QUANTITY and VALUE of the FISH returned compared with the

	North Coast.				East Coast.			
	1909.		1908.		1909.		1908.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
Brill, . . . . .	.	.	.	.	86	117	84	123
Soles . . . . .	.	.	.	.	118	434	39	107
Turbot, . . . . .	.	.	.	.	44	176	23	71
Total Prime Fish, .	—	—	—	—	248	727	146	301
Cod,	278	126	154	113	1,014	923	912	798
Conger Eel	2	1	4	3	410	190	433	278
Haddock,	294	125	537	215	520	476	460	507
Hake,	—	—	—	—	402	387	317	387
Herrings,	52,292	17,318	17,795	7,203	6,001	1,028	984	176
Ling,	—	—	—	—	391	139	419	290
Mackerel,	782	340	14	2	—	—	—	—
Plaice,	—	—	2	1	336	350	381	578
Ray or Skate,	—	—	10	3	455	122	452	130
Sprats	—	—	—	—	—	—	—	—
Whiting,	3	2	10	6	416	342	480	468
All other except Shell Fish,	93	25	86	40	599	335	457	316
Total,	53,744	17,937	18,612	7,586	10,792	5,019	5,441	4,229
SHELL FISH :—	No.		No.		No.		No.	
Crabs,	480	1	—	—	—	—	—	—
Lobsters,	—	—	—	—	752	30	401	14
Mussels,	Cwts.	—	Cwts.	—	Cwts.	455	Cwts.	909
Oysters,	No.	—	No.	—	No.	1,953	No.	11,498
Other Shell Fish, . .	Cwts.	—	Cwts.	—	Cwts.	21	Cwts.	68
Total,	—	1	—	—	—	78	—	108
Total value of Fish landed	—	17,938	—	7,586	—	5,097	—	4,337

NOTE.—The above figures are

IRELAND.

as landed on the IRISH COASTS during the month of January, 1909, as corresponding period in 1908.

South Coast.				West Coast.				Total.			
1909.		1908.		1909.		1908.		1909.		1908.	
Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
2	3	1	3	—	—	—	—	88	120	85	126
17	68	11	47	37	125	61	175	172	627	111	329
1	4	—	—	12	51	31	136	57	231	54	207
20	75	12	50	49	176	92	311	317	978	250	662
30	30	51	39	748	367	571	312	2,070	1,446	1,688	1,262
10	3	—	—	51	21	294	164	473	215	731	445
3	3	136	63	1,089	544	1,249	654	1,906	1,148	2,382	1,439
6	5	—	—	4	2	24	27	412	394	341	414
661	210	6,775	1,229	249	91	2,124	829	59,203	18,647	27,678	9,437
—	—	—	—	186	98	265	130	577	237	684	420
4,286	1,123	2,109	851	8,337	3,483	3,264	1,847	13,405	4,946	5,387	2,700
121	116	85	84	61	74	838	661	518	540	1,306	1,324
—	—	—	—	126	34	133	42	581	156	595	175
698	80	—	—	—	—	—	—	698	80	—	—
121	25	12	5	483	201	966	446	1,023	570	1,468	925
173	71	120	64	86	55	145	106	951	486	808	526
6,129	1,741	9,300	2,385	11,469	5,146	9,965	5,529	82,134	29,843	43,318	19,729
No.	—	No.	—	No.	—	No.	—	No.	480	No.	—
—	—	—	—	664	21	1,300	48	1,416	51	1,701	62
Cwts.	—	Cwts.	—	Cwts.	16	Cwts.	302	Cwts.	654	Cwts.	51
3	1	—	—	196	—	—	—	—	—	—	—
No.	—	No.	—	No.	—	No.	—	No.	—	No.	—
7,308	20	9,956	29	—	—	3,654	4	9,261	23	25,108	54
Cwts.	—	Cwts.	—	Cwts.	—	Cwts.	—	Cwts.	—	Cwts.	—
778	285	439	87	871	177	944	185	1,670	480	1,451	319
—	306	—	116	—	214	—	262	—	599	—	486
—	2,047	—	2,501	—	5,360	—	5,791	—	30,442	—	20,215

subject to correction in Annual Returns.

FISHERY STATISTICS—

STATEMENT of the Total QUANTITY and VALUE of the FISH returned compared with the

	North Coast.				East Coast.			
	1909.		1908.		1909.		1908.	
	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.
	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
Brill,	—	—	—	—	55	74	40	58
Soles,	—	—	—	—	17	61	21	68
Turbot,	—	—	—	—	19	67	18	53
Total Prime Fish	—	—	—	—	91	202	79	179
Cod,	816	219	126	75	1,994	1,374	1,787	1,029
Conger Eel,	—	—	1	1	546	236	428	235
Haddock,	313	121	337	158	810	641	664	546
Hake,	—	—	—	—	527	470	498	469
Herrings,	39,277	6,630	4,700	1,447	686	174	982	220
Ling,	9	6	2	1	508	160	559	241
Mackerel,	—	—	281	38	—	—	—	—
Plaice,	5	5	2	1	367	391	1,183	1,379
Ray or Skate,	3	1	11	3	562	138	491	128
Sprats,	—	—	—	—	—	—	—	—
Whiting,	20	11	16	8	755	510	761	527
All other except Shell Fish.	379	78	53	35	695	363	694	394
Total,	40,822	7,071	5,529	1,767	7,541	4,659	8,126	5,347
SHELL FISH :—	No.		No.		No.		No.	
Crabs,	—	—	—	—	178	1	—	—
Lobsters,	—	—	—	—	658	24	251	12
Mussels,	Cwts.	—	Cwts.	—	Cwts.	13	Cwts.	16
Oysters,	No.	—	No.	—	No.	18	No.	25
Other Shell Fish,	Cwts.	—	Cwts.	—	Cwts.	27	Cwts.	41
Total,	—	—	—	—	—	83	—	94
Total value of Fish landed	—	7,071	—	1,767	—	4,742	—	5,441

NOTE.—The above figures are

IRELAND.

as landed on the IRISH COASTS during the month of February, 1909, as corresponding period in 1908.

South Coast.				West Coast.				Total.			
1909.		1908.		1909.		1908.		1909.		1908.	
Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
—	—	2	4	—	—	—	—	55	74	42	62
30	133	16	73	116	460	55	339	163	654	92	480
—	—	1	2	30	101	18	71	49	168	37	126
30	133	19	79	146	561	73	410	267	896	171	668
79	60	59	39	2,883	1,028	804	386	5,772	2,681	2,776	1,529
9	4	—	—	686	225	105	33	1,241	465	534	269
14	9	78	72	1,490	837	1,805	780	2,627	1,608	2,884	1,556
1	1	—	—	3	2	3	2	531	473	501	471
2,097	530	274	56	1,781	423	185	54	43,841	7,757	6,141	1,777
31	28	92	52	766	339	483	258	1,314	533	1,136	552
1,082	286	902	353	731	317	994	255	1,813	603	2,177	646
163	153	151	142	326	287	515	434	861	836	1,851	1,956
4	1	—	—	501	101	254	48	1,070	241	756	179
6	1	—	—	—	—	—	—	6	1	—	—
106	26	62	18	512	228	482	245	1,393	775	1,321	798
133	50	142	61	529	321	97	46	1,736	812	986	536
3,755	1,282	1,779	872	10,354	4,669	5,800	2,951	62,472	17,681	21,234	10,937
No.	—	No.	—	No.	—	No.	—	No.	178	No.	—
36	2	71	5	1,424	51	988	42	2,118	77	1,310	59
Cwts.	—	Cwts.	—	157	15	90	7	372	28	644	23
No.	—	No.	—	No.	—	No.	—	No.	—	No.	—
8,442	23	5,922	12	22,806	19	8,694	9	41,283	60	31,374	46
Cwts.	—	Cwts.	—	806	158	722	167	1,717	478	1,348	312
839	293	568	104	—	—	—	—	—	—	—	—
—	318	—	121	—	243	—	225	—	644	—	440
—	1,600	—	993	—	4,912	—	3,176	—	18,325	—	11,377

subject to correction in Annual Returns.

FISHERY STATISTICS—

STATEMENT of the Total QUANTITY and VALUE of the FISH returned compared with the

—	North Coast.				East Coast.			
	1909.		1908.		1909.		1908.	
	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.
	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
Brill,	—	—	—	—	18	29	23	41
Soles,	—	—	—	—	14	58	13	47
Turbot,	—	—	—	—	26	111	15	45
Total Prime Fish,	—	—	—	—	58	198	51	133
Cod,	73	39	44	28	2,528	1,687	1,757	937
Conger Eel,	—	—	—	—	1,043	554	624	330
Haddock,	62	32	268	127	1,330	963	581	540
Hake,	—	—	—	—	968	761	505	468
Herrings,	340	118	—	—	38	25	32	9
Ling,	—	—	—	—	922	280	665	191
Mackerel,	—	—	—	—	—	—	—	—
Plaice,	121	133	45	45	309	329	1,323	1,607
Ray or Skate,	70	17	23	9	1,110	287	913	196
Sprats,	—	—	—	—	—	—	—	—
Whiting,	—	—	50	25	1,267	816	553	479
All other except Shell Fish,	191	94	147	59	1,178	678	709	430
Total,	857	433	577	293	10,751	6,578	7,713	5,320
SHELL FISH :—	No.		No.		No.		No.	
Crabs,	2,160	5	170	1	—	—	220	1
Lobsters,	264	13	45	2	591	23	891	33
Mussels,	Cwts.	—	Cwts.	—	230	19	Cwts.	12
Oysters,	No.	—	No.	—	7,444	20	No.	6
Other Shell Fish,	Cwts.	—	Cwts.	—	82	41	Cwts.	59
Total,	—	18	—	3	—	103	—	111
Total value of Fish landed,	—	451	—	296	—	6,681	—	5,431

NOTE.—The above figures are

IRELAND.

as landed on the IRISH COASTS during the month of March, 1909, as corresponding period in 1908.

South Coast.				West Coast.				Total.			
1909.		1908.		1909.		1908.		1909.		1908.	
Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
—	—	1	1	4	5	38	46	22	34	62	88
26	117	26	124	316	1,255	375	2,047	356	1,430	414	2,218
5	19	5	18	20	86	7	32	51	216	27	95
31	136	32	143	340	1,346	420	2,125	429	1,680	503	2,401
64	46	46	31	3,579	1,027	2,270	893	6,244	2,799	4,117	1,889
—	—	16	6	284	114	39	15	1,327	668	679	351
28	25	44	40	766	422	1,527	859	2,186	1,442	2,420	1,566
—	—	6	2	218	95	472	134	1,186	856	983	604
4	2	71	20	2,148	563	273	93	2,530	708	376	122
27	24	35	27	901	328	1,817	484	1,850	632	2,517	702
12	7	764	365	16	10	1,225	775	28	17	1,989	1,140
104	111	135	127	476	657	891	778	1,010	1,230	2,394	2,557
13	3	21	4	530	145	474	72	1,723	452	1,431	281
—	—	—	—	—	—	—	—	—	—	—	—
68	19	68	16	233	106	668	327	1,568	941	1,339	847
211	109	217	99	336	175	607	141	1,916	1,056	1,680	729
562	482	1,455	880	9,827	4,988	10,683	6,696	21,997	12,481	20,428	13,189
No.	—	No.	—	No.	—	No.	—	No.	—	No.	—
—	—	—	—	—	—	—	—	2,160	5	390	2
174	9	—	—	2,254	88	1,063	40	3,283	133	1,999	75
Cwts.	—	Cwts.	—	Cwts.	46	Cwts.	38	Cwts.	65	Cwts.	16
—	—	—	—	597	—	—	—	827	—	282	—
No.	—	No.	—	No.	—	No.	—	No.	—	No.	—
6,048	12	6,678	13	67,284	68	6,300	6	80,776	100	17,892	25
Cwts.	—	Cwts.	—	Cwts.	—	Cwts.	—	Cwts.	—	Cwts.	—
654	216	342	79	737	129	817	178	1,473	386	1,265	316
—	237	—	92	—	331	—	228	—	689	—	434
—	719	—	972	—	5,319	—	6,924	—	13,170	—	13,623

subject to correction in Annual Returns.

STATEMENT of the TOTAL VALUE of FISH landed on the ENGLISH and WELSH COASTS during the Month and Three Months ended 31st March, 1909, compared with the corresponding Periods of the Year 1908.

	March.		Three Months ended 31st March.	
	1909.	1908.	1909.	1908.
	VALUE.			
	£.	£.	£.	£.
Brill,	4,537	6,943	15,661	20,454
Soles,	38,661	40,214	104,278	107,644
Turbot,	22,165	19,558	70,205	58,391
Prime Fish not separately distinguished,	176	—	682	—
Total Prime Fish, ..	65,539	66,715	190,826	186,489
Bream,	2,442	1,373	7,473	6,742
Catfish,	2,693	3,710	5,400	6,804
Coalfish,	3,887	6,861	13,910	20,119
Cod,	93,344	119,777	274,541	330,249
Conger Eels,	3,588	2,752	9,213	8,428
Dabs,	7,555	7,747	18,672	19,992
Dogfish,	211	155	2,730	1,762
Dory,	63	112	293	339
Flounders or Flukes, ..	710	748	1,686	1,495
Gurnards,	2,244	2,857	6,950	8,304
Haddock,	117,761	120,303	334,907	372,377
Hake,	51,961	35,148	131,755	115,351
Halibut,	26,732	24,196	59,207	62,021
Latchets (Tubs),	214	36	724	146
Lemon Soles,	7,741	11,210	19,922	25,250
Ling,	7,719	11,530	21,514	27,870
Megrim,	8,907	5,968	20,396	18,159
Monks (or Anglers), ..	1,268	1,003	4,094	3,234
Mullet (Red),	164	223	448	1,141
Plaice,	62,080	70,653	191,547	208,230
Pollock,	1,101	1,227	2,498	2,819
Skates and Rays,	21,441	18,352	63,191	57,274
Torsk,	770	703	2,545	1,913
Whiting,	12,438	15,105	40,570	44,196
Witches,	6,839	4,954	16,329	12,956
Herrings,	517	173	6,864	5,237
Mackerel,	13,737	12,557	16,187	22,943
Mullet (Grey),	342	324	673	515
Pilchards,	—	—	32	—
Sprats,	17	41	4,271	3,093
Whitebait,	818	569	2,637	1,743
Fish not separately distinguished,	14,484	18,163	39,635	47,540
Total,	539,327	565,245	1,511,640	1,624,731
Shell Fish :—	£.	£.	£.	£.
Crabs,	1,874	3,250	4,790	7,306
Lobsters,	941	1,363	2,332	2,922
Oysters,	6,800	9,751	22,706	31,950
Other Shell Fish,	8,169	9,206	26,299	27,437
Total,	17,784	23,570	56,127	69,615
Total value of all Fish, .	557,111	588,815	1,567,767	1,694,346

NOTE.—The figures for 1909 are subject to correction in the Annual Returns.

STATEMENT of the TOTAL QUANTITY of FISH landed on the ENGLISH and WELSH COASTS during the Month and Three Months ended 31st March, 1909, compared with the corresponding Periods of the Year 1908.

	March.		Three Months ended 31st March.	
	1909.	1908.	1909.	1908.
	QUANTITY.			
	Cwts.	Cwts.	Cwts.	Cwts.
Brill,	1,533	1,900	5,267	6,179
Soles,	5,164	5,151	14,558	14,723
Turbot,	5,108	4,852	16,047	14,874
Prime Fish not separately distinguished,	126	—	476	—
Total Prime Fish, ..	11,931	11,903	36,348	35,776
Bream,	7,257	4,110	29,938	24,899
Catfish,	10,190	8,392	16,269	14,834
Coalfish,	21,750	28,657	60,257	79,270
Cod,	228,277	238,927	533,802	565,524
Conger Eels,	3,932	3,780	11,418	10,705
Dabs,	10,536	10,250	25,217	24,110
Dogfish,	795	556	11,582	6,283
Dory,	54	100	289	306
Flounders or Flukes, ..	1,429	1,460	3,258	2,753
Gurnards,	9,780	9,724	25,418	27,403
Haddock,	214,372	205,926	528,938	540,356
Hake,	57,793	45,033	138,137	122,861
Halibut,	10,367	10,802	19,194	22,583
Latchets (Tubs),	281	54	957	181
Lemon Soles,	3,554	4,420	7,541	9,189
Ling,	19,615	23,579	50,344	52,992
Megrim,	12,746	8,322	26,790	21,933
Monks (or Anglers), ..	3,162	2,391	9,439	7,706
Mullet (Red),	72	103	194	476
Plaice,	51,725	52,466	150,656	155,290
Pollock,	2,577	2,525	5,338	5,199
Skates and Rays,	37,595	28,695	102,290	89,461
Torsk,	2,226	1,884	4,908	4,887
Whiting,	26,573	32,688	78,857	86,639
Witches,	6,220	4,346	14,852	11,333
Herrings,	1,786	1,233	16,571	15,987
Mackerel,	17,580	15,179	19,750	29,633
Mullet (Grey),	190	177	400	277
Pilchards,	3	—	91	—
Sprats,	62	309	32,785	17,493
Whitebait	563	570	1,808	1,744
Fish not separately distinguished,	30,436	40,311	82,244	102,972
Total,	805,429	798,872	2,045,880	2,090,755
Shell Fish :—	No.	No.	No.	No.
Crabs,	163,812	300,032	381,803	686,719
Lobsters,	18,384	26,903	44,816	57,375
Oysters,	1,893,110	2,884,610	6,258,945	9,149,337
Other Shell Fish,	Cwts.	Cwts.	Cwts.	Cwts.
	35,136	42,400	119,088	139,642

NOTE.—The figures for 1909 are subject to correction in the Annual Returns.

**AVERAGE PRICES OF CROPS, LIVE STOCK, MEAT, PROVISIONS, &c., for the QUARTER
ended 31st MARCH, 1909.**

PRODUCT.	PROVINCE.				IRELAND.	
	Leinster.	Munster.	Ulster.	Con-naught.	1909.	1908.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
CROPS :—						
Wheat, per 112 lbs.	—	—	—	—	—	7 1½
Oats (White) „	6 4	6 8½	5 11	5 7½	5 11½	6 9½
„ (Black) „	5 9½	5 3½	—	—	5 5½	5 7½
Barley „	—	—	—	—	—	—
Potatoes, „	2 8½	3 3½	2 1½	2 8½	2 8	4 3½
Hay (Clover) „	3 10½	3 2½	3 0½	2 11	3 5½	3 3½
„ (Meadow) „	3 0	2 1½	—	2 3	2 4	2 0½
Grass Seed—						
(Perennial Rye) „	—	—	19 4½	—	19 4½	16 4
(Italian Rye) „	—	—	—	—	—	—
Flax, per 14 lbs.	—	—	6 9	—	6 0	6 7½
LIVE STOCK :—						
Store Cattle :—	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
One year old, per head	7 8 3	8 14 10	5 19 8	7 12 5	7 17 8	7 14 9
Two years old, „	10 7 0	10 12 11	8 9 5	9 19 5	10 1 1	10 3 8
Three years old, „	12 10 5	—	—	12 10 11	12 10 0	12 17 5
Springers, „	13 15 2	13 13 5	13 10 7	14 13 3	13 18 0	13 16 1
Store Sheep :—						
Lambs, per head.	1 8 10	1 8 0	—	1 5 5	1 7 7	1 14 2
One year old						
and over „	1 11 5	1 18 3	—	1 13 7	1 15 11	1 19 0
Two years old						
and over „	1 18 9	—	—	1 14 10	1 17 4	2 4 11
Store Pigs (8 to 10 weeks old), „	1 2 6	1 2 3	1 5 10	1 5 3	1 3 10	0 19 8
Fat Cattle :—						
Bullocks, „	—	—	—	—	17 14 4	17 18 6
Heifers, „	—	—	—	—	15 12 10	16 1 11
Cows, „	—	—	—	—	15 15 1	15 6 8
Fat Sheep :—						
Wethers, „	—	—	—	—	2 4 4	2 12 3
Ewes, „	—	—	—	—	1 17 0	2 8 3
Hoggets, „	—	—	—	—	1 18 8	2 2 0
Lambs, „	—	—	—	—	—	—
MEAT, PROVISIONS, &c.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Beef (Live) per 112 lbs.	—	—	—	—	33 2	32 9
„ (Dead), „	—	—	—	—	58 0	57 4
Mutton (Live), „	—	—	—	—	32 2	40 0
„ (Dead), „	—	—	—	—	56 4	70 0
Pork (Dead), „	47 6	48 11	49 1	48 0	48 10	45 3½
Butter (Creamery), „	111 7	109 2	—	—	109 3	116 8
„ (Factory) „	102 5	90 3	—	—	91 2	104 8
„ (Farmers), „	98 6	92 7	112 0	84 4	95 7	110 11
Eggs, „ per 120,	10 7	9 1	—	9 0½	9 11½	8 7½
Wool, „ per lb.	0 9½	—	—	0 9½	0 9½	0 8½

WEEKLY AVERAGE PRICE of WHEAT, OATS, and BARLEY, per 112 lbs.,
computed from Market Returns of certain quantities of these
Cereals supplied by Inland Revenue Officers, during the QUARTER
ended 31st March, 1909.

Returns received in the Week ended	WHEAT.		OATS.		BARLEY.	
	Average Price per 112 lbs.	Quantity.	Average Price per 112 lbs.	Quantity.	Average Price per 112 lbs.	Quantity.
1909.	<i>s. d.</i>	Cwts. of 112 lbs.	<i>s. d.</i>	Cwts. of 112 lbs.	<i>s. d.</i>	Cwts. of 112 lbs.
January 2	—	—	5 5½	5,425	—	—
" 9	—	—	5 5	6,793	—	—
" 16	—	—	5 6½	6,853	—	—
" 23	6 6	100	5 7	6,939	8 0	2,000
" 30	—	—	5 6½	8,446	—	—
February 6	—	—	5 6¾	9,219	—	—
" 13	—	—	5 7½	8,740	—	—
" 20	—	—	5 10¼	7,628	—	—
" 27	—	—	5 9¾	7,550	—	—
March 6	—	—	6 0	5,147	—	—
" 13	—	—	6 1¼	5,766	—	—
" 20	—	—	6 3½	5,161	—	—
" 27	—	—	6 5	5,461	—	—

AVERAGE PRICES of FAT CATTLE and FAT SHEEP, per 112 lbs., LIVE WEIGHT, sold in DUBLIN
MARKETS during the QUARTER ended 31st MARCH, 1909, and also for the corresponding
period during twelve preceding years.

Description	YEAR.													
	1909.	1908.	1907.	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.	
Fat Cattle,	s. d. 33 2	s. d. 32 9	s. d. 32 0	s. d. 30 11½	s. d. 31 5½	s. d. 30 8½	s. d. 33 10	s. d. 32 6½	s. d. 32 4½	s. d. 33 2	s. d. 31 8	s. d. 29 9½	s. d. 31 4½	
Fat Sheep,	s. d. 32 2	s. d. 40 0	s. d. 43 2½	s. d. 42 5½	s. d. 39 9½	s. d. 39 6½	s. d. 41 0½	s. d. 34 7	s. d. 36 9½	s. d. 37 5	s. d. 34 1½	s. d. 36 9½	s. d. 36 11½	

NUMBER of ANIMALS in Returns furnished under the MARKERS and FAIRS (Weighing of Cattle) ACT, 1891, sections 3 and 4,
during the Quarter ended 31st MARCH, 1909.

WEEK ENDED	FAT CATTLE.						FAT SHEEP.			
	Dublin.			Belfast.			Dublin.		Belfast.	Total Number of Sheep included in Returns
	Corporation Market Authorities.	Mr. Gavin Low, Auctioneer.	Corporation Market Authorities.	Corporation Market Authorities.	Mr. John Robson, Auctioneer.	Total Number of Cattle included in Returns.	Corporation Market Authorities.	Mr. Gavin Low, Auctioneer.	Corporation Market Authorities.	
1909.										
January 7	75	205	126	63	469	469	—	367	—	367
" 14	60	116	122	48	346	346	—	386	—	386
" 21	69	167	128	34	398	398	—	143	—	143
" 28	68	173	131	43	415	415	—	257	—	257
February 4	72	154	124	32	382	382	12	216	—	228
" 11	63	160	133	41	397	397	—	305	—	305
" 18	88	178	124	41	431	431	10	254	—	264
" 25	49	146	116	25	336	336	50	256	—	306
March 4	85	157	102	34	378	378	—	291	—	291
" 11	63	170	99	27	359	359	—	304	—	304
" 18	65	152	97	30	344	344	—	289	—	289
" 25	76	147	101	39	363	363	—	390	—	390
Totals	833	1,925	1,403	457	4,618	4,618	72	3,458	—	3,530

DISEASES OF ANIMALS IN IRELAND.

NUMBER OF OUTBREAKS of SWINE FEVER, and Number of SWINE returned as having been SLAUGHTERED in Ireland, under the Diseases of Animals Act of 1894, in the undermentioned period, by Order of the Department.

Quarter ended.	SWINE-FEVER.	
	Outbreaks confirmed.	Swine Slaughtered as Diseased or as having been Exposed to Infection.
31st March, 1909,	8	71

NUMBER of OUTBREAKS reported as having taken place, and NUMBER of ANIMALS returned as having been ATTACKED by ANTHRAX and GLANDERS in Ireland in the undermentioned period.

Quarter ended.	ANTHRAX.		GLANDERS (including Farcy).		Epizootic Lymphangitis.	
	Outbreaks Reported.	Animals Attacked.	Outbreaks Reported.	Animals Attacked.	Outbreaks Reported.	Animals Attacked.
31st March, 1909.	2	2	—	—	—	—

NUMBER of CASES of RABIES in DOGS in IRELAND during the undermentioned period.

Quarter ended.	Number of Cases.
31st March, 1909,	—

NUMBER of OUTBREAKS reported as having taken place, and NUMBER of ANIMALS returned as having been attacked by SHEEP-SCAB and PARASITIC-MANGE in Ireland in the undermentioned period.

Quarter ended.	SHEEP-SCAB.		PARASITIC-MANGE.	
	Outbreaks Reported.	Sheep Attacked.	Outbreaks Reported.	Animals Attacked.
31st March, 1909	226	3,554	30	41

Veterinary Branch,
Department of Agriculture and Technical Instruction
for Ireland, Dublin.

BUTTER PRICES DURING THE QUARTER

ABSTRACTED FROM "THE GROCER," "GROCER'S REVIEW,"

Excepting 1-lb. Rolls and Farmers' Butter all quotations are the
 an Irish Creamery would be 5s. to 7s. per cwt. less than
 freight, commission,

COUNTRY OF ORIGIN.	Type of Package.	Place of Sale.	WEEK ENDED.			
			JANUARY.			
			2nd	9th	16th	23rd
IRELAND— Creamery Butter,	Kieis, kegs, or pyramid boxes,	London, ..	Per cwt. s. s.	Per cwt. s. s.	Per cwt. s. s.	Per cwt. s. s.
		Liverpool, ..	106-110	—	104-110	—
		Bristol, ..	—	—	—	—
		Cardiff, ..	114-116	—	112	—
		Manchester, ..	—	107-112	100-115	108-114
		Birmingham, ..	—	—	—	—
		Glasgow, ..	—	—	—	—
		Limerick, ..	—	—	—	—
		Cork, ..	—	—	—	—
		Belfast, ..	—	—	—	—
	1lb. rolls, boxes,	Dublin, ..	108-110	112-114	116/8-119	112-116/8
		F. O. R., ..	126	126	126	126
		London, ..	—	—	—	—
		Liverpool, ..	100-106	100-106	100-104	100-106
		Bristol, ..	—	—	—	—
Factories, ..	Farmers' Butter .	Cardiff, ..	—	—	98-100	98-100
		Manchester, ..	—	—	—	—
		Cork, ..	100-102	101-103	102-103	97-103
		Do. 2nd „	92-94	94-99	90-93	91-93
		Do. 3rd „	90-92	89-91	89-91	89
		Fresh, ..	91-106	92-104	92-108	91-108
	12 x 2lb. rolls,	London, ..	Per doz. lbs. 12-15	Per doz. lbs. 12-15	Per doz. lbs. 11/6-14/6	Per doz. lbs. 11/6-14/6
		Paris baskets, .	Per cwt. 119-120	Per cwt. 119-120	Per cwt. 113-116	Per cwt. 113-116
		do., ..	—	—	—	—
		do., ..	—	—	—	—
		do., ..	—	—	—	—
DENMARK AND SWEDEN.	Kieis, ..	Copenhagen Quotation, ..	93 Kr. 104/2 per=per 50-cwt. Kilos.	96 Kr. 107/4 per=per 50-cwt. Kilos.	96 Kr. 107/4 per=per 50-cwt. Kilos.	96 Kr. 107/4 per=per 50-cwt. Kilos.
		Average over- price, ..	1/14	—	—	—
		London, ..	111-113	114-116	114-116	114-116
		Liverpool, ..	111-115	116-120	116-120	115-119
		Bristol, ..	—	—	—	—
		Cardiff, ..	112-114	116-118	118-120	117-119
		Manchester, ..	110-112	113-116	116-119	114-117
		Birmingham, ..	108/6-112/6	113-117	115/6-118/6	115-118/6
		Newcastle-on- Tyne, ..	108-111	112-114	115-117	113-115
		Glasgow, ..	108-109	111-112	114-115	114-115
	11b. rolls, 10 x 24 lbs. boxes.	Leith, ..	108-109	111-112	115-116	114-115
		Hull, ..	114-116	115-117	116-120	115-118
		F. O. R. London	113/2	116/8	116/8	116/8
		do., ..	—	—	—	—
		do., ..	—	—	—	—
FINLAND, ..	Kieis, ..	Manchester, ..	107-109	109-113	114-115	112-114
		Liverpool, ..	107-111	111-113	114-115	113-114
		Hull, ..	110-112	111-114	112-116	112-116
		Cardiff, ..	110-111	113-114	117	114-115
		do., ..	—	—	—	—

ENDED 31st MARCH, 1909.

"GROCER'S GAZETTE," AND OTHER TRADE REPORTS.

Landed Prices of the Choicest Qualities. The Nett F.O.R. Price to the landed prices in Great Britain. This figure covers handling, &c.

WEEK ENDED.								
FEBRUARY.					MARCH.			
30th	6th	13th	20th	27th	6th	13th	20th	27th
Per cwt. s. s.	Per cwt. s. s.	Per cwt. s. s.	Per cwt. s. s.	Per cwt. s. s.	Per cwt. s. s.	Per cwt. s. s.	Per cwt. s. s.	Per cwt. s. s.
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
107-114	107-114	107-114	107-114	107-114	107-114	107-114	107-114	110 107-114
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
112-116 8 126	112-116/8 126	114-119 126	114-119 126	112-114 126	112-114 126	112-114 126	112-114 126	110-114 126
-	-	-	-	-	-	-	-	-
98-102	98-106	98-106	98-104	96-102	98-104	96-100	96-102	96-100
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	104
-	-	-	-	-	-	-	-	-
100-102	98-100	100-105	96-102	94-90	89-97	91	85-91	90-98
-	-	-	-	-	-	-	-	-
91-94	91-92	90-92	92-94	91-92	85-87	84-88	83-88	84-85
85-89	84-85	85-88	86-87	85-87	84-86	83-84	82-83	83-84
91-106	90-109	88-108	88-105	85-106	82-08	80-06	83-06	82-98
Per doz. lbs. 11/6-14/6 Per cwt. 113-116	Per doz. lbs. 11-14 6 Per cwt. 113-116	Per doz. lbs. 11-14/6 Per cwt. 113-116	Per doz. lbs. 11-14/6 Per cwt. 113-116	Per doz. lbs. 11-14 6 Per cwt. 113-116	Per doz. lbs. 11/6-15 Per cwt. 118-121	Per doz. lbs. 11/6-15 Per cwt. 118-121	Per doz. lbs. 11/6-15 Per cwt. 118-121	Per doz. lbs. 11/6-15 Per cwt. 118-121
06 Kr. 107/4 per = per 50 cwt. Kilos.	99 Kr. 110/6 per = per 50 cwt. Kilos.	99 Kr. 110/6 per = per 50 cwt. Kilos.	97 Kr. 108/5 per = per 50 cwt. Kilos.	97 Kr. 108/5 per = per 50 cwt. Kilos.	97 Kr. 108/5 per = per 50 cwt. Kilos.	97 Kr. 108/3 per = per 50 cwt. Kilos.	97 Kr. 108/3 per = per 50 cwt. Kilos.	97 Kr. 108/3 per = per 50 cwt. Kilos.
-	-	-	-	-	-	-	-	-
114-116 115-118	117-119 117-123	116-119 118-122	114 117 118-120	114-117 117-119	114-116 117-120	114-116 117-119	114-116 118-120	114-116 117-119
-	-	-	-	-	-	-	-	-
118-120	118-119	122-124	120-124	118-120	118-120	118-120	119-120	119-120
119-117	115-117	119-122	115-119	114-117	115-118	115-118	114-117	114-117
114-119	114-118	118-121/6	118-120	114-118	114-118/6	113 6-118/6	115-118/6	115-118/6
112-115	114-117	119-121	117-119	114-116	115-117	116-118	116-118	115-117
-	-	-	-	-	-	-	-	-
114-116 112-113 115-118 116/8	115-116 113-115 115-118 120 2	118-119 119-120 117-122 120/2	117-119 116-117 117-121 117/10	115-117 113-114 114-118 117/10	116-118 113 6-114 6 114-118 117/10	116-118 114-116 115-119 117/10	116-118 115-116 115-118 117/10	116-118 114-115 115-118 117/10
-	-	-	-	-	-	-	-	-
112-114 113-114 112-116 114-116	112-114 114-115 111-116 114-116	116-117 115-116 114-118 118-120	113-116 114-115 114-118 118	112-114 114-115 113-115 116	113-115 114-115 113-115 116-117	113-115 114-116 112-115 117	113-114 114-115 114-116 116-117	113-114 113-115 112-115 116-117

BUTTER PRICES DURING THE QUARTER

ABSTRACTED FROM "THE GROCER," "GROCER'S REVIEW,"

Excepting 1-lb. Rolls and Farmers' Butter all quotations are the
 an Irish Creamery would be 5s. to 7s. per cwt. less than
 freight, commission,

COUNTRY OF ORIGIN.	Type of Package.	Place of Sale.	WEEK ENDED.			
			JANUARY.			
			2nd	9th	16th	23rd
RUSSIA AND SIBERIA.	Kiebs, ..	London, ..	Per cwt. 100-102	Per cwt. 100-104	Per cwt. 100-106	Per cwt. 100-104
		Liverpool, ..	102-107	102-108	100-106	100-108
		Bristol, ..	102-110	102-110	100-108	100-108
		Cardiff, ..	102-111	102-106	102-104	104-106
		Manchester, ..	102-105	102-104	103-104	100-106
		Birmingham, ..	104-104/6	104	106	105
		Glasgow, ..	104-105	104-106	104-106	104-106
		Leith, ..	100-106	100-106	100-104	100-104
		Hull, ..	102-106	104-108	104-110	104-110
HOLLAND, ..	Boxes, ..	London, ..	108-110	110-112	110-112	110-112
	Rolls, ..	do., ..	Per doz. lbs. 12/6-13/6	Per doz. lbs. 13-13/6	Per doz. lbs. 13-13/6	Per doz. lbs. 13-13/6
	Boxes, ..	Glasgow, ..	Per cwt.	Per cwt.	Per cwt.	Per cwt.
		Fresh, ..	114	115-116	115-116	113-114
		Salt, ..	112	112-114	112-114	110-112
		Manchester, ..	-	-	-	109-110
ITALY, ..	Rolls, ..	London, ..	Per doz. lbs. 13-14/6	Per doz. lbs. 13-14/6	Per doz. lbs. 12/6-14	Per doz. lbs. 12/6-14
CANADA, ..	56lb. boxes,	London, ..	Per cwt. -	Per cwt. -	Per cwt. -	Per cwt. -
		Liverpool, ..	-	106-112	-	-
		Bristol, ..	108-116	110-116	108-114	110-112
		Cardiff, ..	-	-	-	-
		Birmingham, ..	-	-	-	-
		Manchester, ..	-	-	-	-
		Glasgow, ..	-	-	-	-
AUSTRALIA AND NEW ZEALAND,*	Boxes, ..	London, ..	A. { s 104-108 u 104-108	A. { s 106-110 u 104-112	A. 106-110	A. { s 105-110 u 108-110
		Liverpool, ..	Z. 110-114	Z. -	Z. -	Z. 111-112
		Bristol, ..	A. 106-112	A. 110-114	A. 111-114	A. 109-112
		Cardiff, ..	Z. 110-115	Z. 115-117	Z. 117-118	Z. 114-117
		Birmingham, ..	A. 104-114	A. 110-114	A. 111-115	A. 108-114
		Manchester, ..	Z. 112-118	Z. 116-118	Z. 118-119	Z. 115-118
		Glasgow, ..	A. 113-114	A. 112-115	A. 112-114	A. 112-115
		Leith, ..	Z. 118	Z. 118	Z. 118-120	Z. 117
		Manchester, ..	A. 103-104	A. 105-110	A. 108-112	A. 106-111
		Birmingham, ..	Z. -	Z. -	Z. -	Z. 114-115
		Glasgow, ..	A. -	A. -	A. 108-110	A. 107-110
		Leith, ..	Z. 110/6-112	Z. 114-116/6	Z. -	Z. -
		Bristol, ..	A. 110-112	A. 112-113	A. 110-112	A. 110-112
		Cardiff, ..	Z. 110-112	Z. 114-116	Z. 114-115	Z. 114-115
		Manchester, ..	A. -	A. -	A. -	A. -
		Glasgow, ..	Z. -	Z. -	Z. -	Z. -
ARGENTINA, ..	Boxes, ..	London, ..	104-108	106-110	106-108	106-110
		Liverpool, ..	105-111	110-114	108-113	108-112
		Bristol, ..	-	-	112-116	112-114
		Cardiff, ..	110-114	112-115	114-116	112-114
		Manchester, ..	105-108	107-111	110-112	106-112
		Birmingham, ..	106-109	110-112	110 6-112	110 6-112
		Glasgow, ..	108	112	112	110
UNITED STATES,	Tubs & boxes,	London, ..	-	-	-	-
		Liverpool, ..	-	-	-	-
		Bristol, ..	-	-	-	-
		Cardiff, ..	-	-	-	-
		Manchester, ..	-	-	-	-

*A.—Australia.

Z.—New Zealand.

s.—salted.

u.—unsalted.

ENDED 31ST MARCH, 1909.—*continued.*

"GROCER'S GAZETTE," AND OTHER TRADE REPORTS.

Landed Prices of the Choicest Qualities. The Nett F.O.R. Price to the landed price in Great Britain. This figure covers handling, &c.

[illegible]

TABLES SHOWING THE EXPORTS

TABLE

RETURN of the NUMBER of ANIMALS EXPORTED from IRELAND to GREAT
the PORTS of EMBARKATION

IRISH PORTS.	CATTLE.							SHEEP.			
	Fat.	Stores (fattening).	Milch Cows.	Springers.	Other Cattle.	Calves.	Total.	Fat.	Stores.	Lambs.	Total.
Ballina, . . .	174	-	-	-	120	-	294	24	-	-	24
Belfast, . . .	6,000	12,853	1,288	1,652	26	212	22,631	1,153	-	1	1,154
Coleraine, . .	5	124	-	1	1	-	131	-	-	-	-
Cork, . . .	2,444	11,881	515	856	703	3,657	20,056	6,931	3,093	63	10,087
Drogheda, . .	4,060	246	211	10	-	-	4,527	2,159	-	16	2,175
Dublin, . . .	34,326	24,114	6,123	1,020	904	1,648	68,135	32,090	-	26	33,025
Dundalk, . . .	4,574	3,440	128	65	-	1	8,208	487	-	2	489
Dundrum, . .	-	112	-	2	-	-	114	-	-	-	-
Greenore, . .	216	1,386	204	400	-	-	2,206	343	-	-	343
Larne, . . .	294	3,478	-	15	-	329	4,116	-	19	-	19
Limerick, . .	640	26	-	-	46	-	712	-	-	-	-
Londonderry, .	3,700	7,534	216	904	532	1,884	14,830	635	83	-	718
Milford, . . .	3	33	-	1	3	-	40	-	-	-	-
Mulroy, . . .	1	47	-	-	-	-	48	-	-	-	-
Newry, . . .	47	813	5	1	-	-	866	400	-	-	400
Portrush, . .	1	63	-	-	-	-	64	-	-	-	-
Rosslare, . .	-	-	-	-	-	-	-	-	-	-	-
Sligo, . . .	42	91	3	1	106	-	333	257	-	-	257
Warrenpoint, .	-	-	-	-	-	-	-	-	-	-	-
Waterford, . .	8,443	10,681	34	25	429	588	20,200	4,405	-	-	4,405
Westport, . .	102	-	1	3	54	-	160	922	-	-	922
Wexford, . . .	914	-	-	-	-	-	914	1,546	-	-	1,546
Total, . . .	66,586	76,922	8,728	5,016	3,014	8,319	168,585	52,261	3,195	108	55,564

TABLE

RETURN of the NUMBER of ANIMALS EXPORTED from IRELAND to GREAT
the PORTS of DEBARKATION

BRITISH PORTS.	CATTLE.							SHEEP.			
	Fat.	Stores (fattening).	Milch Cows.	Springers.	Other Cattle.	Calves.	Total.	Fat.	Stores.	Lambs.	Total.
Ardrossan, . .	1,611	1,743	644	587	22	5	4,612	-	-	-	-
Ayr, . . .	1,684	4,483	234	309	2	163	6,965	-	19	1	20
Barrow, . . .	246	1,056	45	137	-	-	2,084	39	-	-	39
Bristol, . . .	1,126	2,602	130	256	-	747	4,861	985	3,038	51	4,074
Cardiff, . . .	-	-	-	-	-	-	-	-	-	-	-
Dover, . . .	-	-	-	2	-	-	2	-	-	-	-
Flashguard, . .	6,727	12,146	320	475	223	2,836	22,736	7,450	55	12	7,526
Fleetwood, . .	2,848	2,237	198	222	-	20	5,525	324	-	-	324
Glasgow, . . .	6,575	7,991	918	967	1,597	3,327	21,405	310	-	-	310
Greenock, . . .	339	1,578	5	74	16	-	2,012	-	83	-	83
Heysham, . . .	1,473	11,798	640	324	32	55	14,322	455	-	-	455
Holyhead, . .	7,247	10,680	919	502	71	80	19,499	9,420	-	-	9,420
Liverpool, . .	26,904	16,160	4,658	1,023	1,051	643	50,439	30,514	-	6	30,538
London, . . .	-	-	-	-	-	-	-	-	-	-	-
Manchester, . .	7,554	-	8	1	-	-	7,563	2,728	-	14	2,742
Newhaven, . .	-	-	-	-	-	-	-	-	-	-	-
Plymouth, . .	530	117	-	2	-	-	649	-	-	-	-
Preston, . . .	139	-	-	-	-	-	139	-	-	-	-
Stiloth, . . .	1,246	774	-	-	-	15	2,035	-	-	-	-
Southampton, .	64	28	-	2	-	131	225	27	-	-	27
Stranraer, . .	273	2,817	-	11	-	297	3,398	-	-	-	-
Whitehaven, . .	-	112	-	2	-	-	114	-	-	-	-
Total, . . .	66,586	76,922	8,728	5,016	3,014	8,319	168,585	52,261	3,195	108	55,564

AND IMPORTS OF ANIMALS.

I.

BRITAIN during the Three Months ended 31st MARCH, 1909, showing
in Ireland.

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	IRISH PORTS.
Fat.	Stores.	Total.		Stal- lions.	Mares.	Geld- ings.	Total.				
50	-	50	-	-	-	-	-	-	-	368	Ballina.
1,774	416	2,190	2	2	464	916	1,382	-	3	27,362	Belfast.
22	-	22	-	-	-	1	1	-	-	154	Coleraine.
7,611	55	7,666	2	1	80	182	269	-	130	38,210	Cork.
1,220	180	1,400	1	-	20	14	34	-	-	8,137	Drogheda.
74,087	-	74,087	6	14	969	788	1,771	-	2	177,026	Dublin.
3,259	182	3,441	200	-	237	157	394	-	-	12,732	Dundalk.
-	-	-	-	-	-	-	-	-	-	114	Dundrum.
324	-	324	143	1	592	382	975	-	-	3,991	Greenore.
23	634	657	2	4	32	35	71	-	-	4,865	Larne.
-	-	-	-	-	-	-	-	-	-	712	Limerick.
499	-	499	1	-	23	48	71	-	-	16,119	Londonderry.
117	-	117	-	-	2	1	3	-	-	160	Milford.
272	-	272	-	-	3	5	8	-	-	328	Mulroy.
343	-	343	1	-	-	5	5	-	1	1,616	Newry.
26	-	26	-	-	-	1	1	-	-	91	Portrush.
-	-	-	-	-	2	5	7	-	-	7	Rosslare.
8,454	-	8,454	-	-	1	6	7	1	-	9,052	Sligo.
-	-	-	-	-	-	-	-	-	-	-	Warrenpoint.
13,408	-	13,408	-	-	282	368	650	-	1	38,664	Waterford.
2,119	-	2,119	-	-	-	-	-	-	-	3,201	Westport.]
975	-	975	-	-	-	-	-	-	-	3,435	Wexford.
114,583	1,467	116,050	358	22	2,713	2,914	5,649	1	137	346,344	Total.

II.

BRITAIN during the Three Months ended 31st MARCH, 1909, showing
in Great Britain.

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	BRITISH PORTS.
Fat.	Stores.	Total.		Stal- lions.	Mares.	Geld- ings.	Total.				
44	435	479	1	-	54	150	204	-	-	5,290	Ardrossan.
188	580	768	1	-	20	59	88	-	1	7,823	Ayr.
1,152	-	1,152	-	-	7	20	27	-	-	3,302	Barrow.
4,647	-	4,647	-	-	44	88	132	-	-	13,714	Bristol.
-	-	-	-	-	-	-	-	-	-	-	Cardiff.
-	-	-	-	-	6	0	15	-	-	17	Dover.
9,184	12	9,196	-	1	304	401	706	-	22	40,186	Fishguard.
270	-	270	-	-	173	242	415	-	-	6,534	Fleetwood.
10,669	-	10,669	1	3	141	313	457	1	2	32,745	Glasgow.
-	-	-	-	-	5	5	10	-	-	2,105	Greenock.
8,253	-	8,253	-	-	128	260	388	-	-	23,418	Heysham.
47,151	-	47,151	144	12	1,339	982	2,333	-	1	78,554	Holyhead.
30,667	264	30,931	209	1	348	270	619	-	110	112,746	Liverpool.
-	-	-	-	-	4	1	5	-	-	5	London.
540	-	540	-	1	69	49	119	-	-	10,964	Manchester.
192	-	192	-	-	6	6	12	-	-	12	Newhaven.
1,505	-	1,505	-	-	4	7	11	-	-	852	Plymouth.
-	-	-	-	-	-	-	-	-	-	1,644	Preston.
841	-	841	-	-	14	11	25	-	-	2,060	Silloth.
-	176	176	-	-	6	6	12	-	1	606	Southampton.
-	-	-	2	4	32	35	71	-	-	3,647	Stranraer.
-	-	-	-	-	-	-	-	-	-	114	Whitehaven.
114,583	1,467	116,050	358	22	2,713	2,914	5,649	1	137	346,344	Total.

TABLE

RETURN of the NUMBER of ANIMALS IMPORTED into IRELAND from GREAT
the PORTS OF

IRISH PORTS.	CATTLE.							SHEEP.			
	Fat.	Stores (fattening).	Milch Cows.	Springers.	Other Cattle.	Calves.	Total.	Fat.	Stores.	Lambs.	Total.
Ballina,	-	-	-	-	-	-	-	-	-	-	-
Belfast,	-	46	-	-	-	-	46	3,471	42	-	3,513
Coleraine,	-	-	-	-	-	-	-	40	-	-	40
Cork,	-	5	-	1	-	-	6	-	10	-	10
Drogheda,	-	-	-	-	-	-	-	-	-	-	-
Dublin,	-	84	-	-	3	1	88	278	158	-	436
Dundalk,	-	-	-	-	-	-	-	-	-	-	-
Dundrum,	-	-	-	-	-	-	-	-	-	-	-
Greenore,	-	17	-	4	2	2	25	1	-	-	1
Larne,	-	16	-	-	-	-	16	64	266	-	330
Limerick,	-	-	-	-	-	-	-	-	-	-	-
Londonderry,	2	22	-	-	-	-	22	-	-	-	-
Milford,	-	-	-	-	-	-	-	-	-	-	-
Mulroy,	-	-	-	-	-	-	-	-	-	-	-
Newry,	-	-	-	-	-	-	-	-	-	-	-
Portrush,	-	-	-	2	-	-	2	-	-	-	-
Rosslare,	-	-	-	-	-	-	-	-	-	-	-
Sligo,	-	1	-	-	-	-	1	-	-	-	-
Warrenpoint,	-	-	-	-	-	-	-	-	-	-	-
Waterford,	-	16	-	-	-	-	16	-	-	-	-
Westport,	-	-	-	-	-	-	-	-	-	-	-
Wexford,	-	-	-	-	-	-	-	-	-	-	-
Total,	2	207	-	7	5	3	224	3,854	476	-	4,330

TABLE

RETURN of the NUMBER of ANIMALS IMPORTED into IRELAND from GREAT
the PORTS of EMBARKATION

BRITISH PORTS.	CATTLE.							SHEEP.			
	Fat.	Stores (fattening).	Milch Cows.	Springers.	Other Cattle.	Calves.	Total.	Fat.	Stores.	Lambs.	Total.
Ardrossan,	-	40	-	-	-	-	40	2,872	-	-	2,872
Ayr,	-	3	-	-	-	-	3	663	15	-	678
Barrow,	-	-	-	-	-	-	-	-	-	-	-
Bristol,	-	-	-	-	-	-	-	-	-	-	-
Cardiff,	-	-	-	-	-	-	-	-	-	-	-
Douglas,	-	-	-	-	-	-	-	-	-	-	-
Fishguard,	-	2	-	-	-	-	2	-	10	-	10
Fleetwood,	-	-	-	-	-	-	-	-	-	-	-
Glasgow,	2	88	-	1	-	1	92	288	124	-	412
Greenock,	-	13	-	2	-	-	15	-	-	-	-
Haysham,	-	1	-	-	-	-	1	-	1	-	1
Holyhead,	-	27	-	4	5	2	38	31	75	-	106
Liverpool,	-	4	-	-	-	-	4	-	-	-	-
London,	-	1	-	-	-	-	1	-	-	-	-
Manchester,	-	-	-	-	-	-	-	-	-	-	-
Newhaven,	-	-	-	-	-	-	-	-	-	-	-
Plymouth,	-	-	-	-	-	-	-	-	-	-	-
Preston,	-	-	-	-	-	-	-	-	-	-	-
Silloth,	-	9	-	-	-	-	9	-	-	-	-
Southampton,	-	3	-	-	-	-	3	-	-	-	-
Stranraer,	-	16	-	-	-	-	16	-	251	-	251
Whitehaven,	-	-	-	-	-	-	-	-	-	-	-
Total,	2	207	-	7	5	3	224	3,854	476	-	4,330

III.

BRITAIN during the Three Months ended 31st MARCH, 1909, showing
DEBARKATION IN IRELAND.

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	IRISH PORTS.
Fat.	Stores.	Total.		Stal- lions.	Mares.	Geld- ings.	Total.				
-	-	-	-	-	-	-	-	-	-	-	Ballina.
-	1	1	1	12	34	59	105	-	-	3,666	Belfast.
-	-	-	-	-	1	1	2	-	-	42	Coleraine.
-	-	-	-	5	12	26	43	-	-	59	Cork.
-	-	-	-	-	-	-	-	-	-	-	Drogheda.
-	3	3	-	25	208	158	391	-	2	920	Dublin.
-	-	-	-	1	1	2	4	-	-	4	Dundaik.
-	-	-	-	-	-	-	-	-	-	-	Dundrum.
-	-	-	-	1	37	10	48	-	-	74	Greenore.
-	-	-	-	8	8	36	52	-	-	398	Larne.
-	-	-	-	-	-	-	-	-	-	2	Limerick.
-	2	2	-	3	3	4	10	-	-	34	Londonderry.
-	-	-	-	-	-	-	-	-	-	-	Millford.
-	-	-	-	-	-	-	-	-	-	-	Mulroy.
-	-	-	-	-	1	1	2	-	-	2	Newry.
-	-	-	-	-	-	-	-	-	-	2	Portrush.
-	-	-	-	-	-	2	2	-	-	2	Rosslare.
-	-	-	-	-	1	2	3	-	-	4	Sligo.
-	-	-	-	-	-	-	-	-	-	-	Warrenpoint.
-	-	-	-	2	30	74	106	-	-	122	Waterford.
-	-	-	-	-	-	1	1	-	-	1	Westport.
-	-	-	-	-	4	1	5	-	-	5	Wexford.
-	6	6	1	57	340	377	774	-	2	5,337	Total.

IV.

BRITAIN during the Three Months ended 31st MARCH, 1909, showing
in Great Britain.

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	BRITISH PORTS.
Fat.	Stores.	Total.		Stal- lions.	Mares.	Geld- ings.	Total.				
-	-	-	-	-	2	2	4	-	-	2,916	Ardrossan.
-	-	-	-	1	3	3	7	-	-	688	Ayr.
-	-	-	-	-	1	-	1	-	-	1	Barrow.
-	-	-	-	-	19	51	70	-	-	70	Bristol.
-	-	-	-	-	-	-	-	-	-	-	Cardiff.
-	-	-	-	-	-	-	-	-	-	-	Douglas.
-	-	-	-	6	26	50	82	-	-	94	Fishguard.
-	1	1	1	5	6	31	42	-	-	44	Fleetwood.
-	-	-	-	3	25	25	53	-	-	557	Glasgow.
-	-	-	-	2	1	7	10	-	-	25	Greenock.
-	1	1	-	8	14	17	39	-	-	42	Heysham.
-	2	2	-	21	210	133	373	-	-	519	Holyhead.
-	2	2	-	3	15	22	40	-	1	47	Liverpool.
-	-	-	-	1	-	1	2	-	-	3	London.
-	-	-	-	-	2	-	2	-	1	3	Manchester.
-	-	-	-	-	-	-	-	-	-	-	Newhaven.
-	-	-	-	-	-	-	-	-	-	-	Plymouth.
-	-	-	-	-	-	-	-	-	-	-	Preston.
-	-	-	-	-	-	-	-	-	-	9	Silloth.
-	-	-	-	-	-	-	-	-	-	3	Southampton.
-	-	-	-	7	7	35	40	-	-	316	Stranraer.
-	-	-	-	-	-	-	-	-	-	-	Whitehaven.
-	6	6	1	57	340	377	774	-	2	5,337	Total.

RETURN of the NUMBER of ANIMALS EXPORTED from IRELAND to the
showing the PORTS of

IRISH PORTS.	CATTLE.					SHEEP.		
	Fat.	Stores.	Other Cattle.	Calves.	Total.	Sheep.	Lambs.	Total.
BELFAST, .	—	2	—	—	2	74	—	74
DUBLIN, .	49	—	—	—	49	12	—	12
TOTAL	49	2	—	—	51	86	—	86

RETURN of the NUMBER of ANIMALS EXPORTED from IRELAND to the
showing the PORTS of DEBARKATION

ISLE OF MAN PORT.	CATTLE.					SHEEP.		
	Fat.	Stores.	Other Cattle.	Calves.	Total.	Sheep.	Lambs.	Total.
DOUGLAS, .	49	2	—	—	51	86	—	86

RETURN of the NUMBER of ANIMALS IMPORTED into IRELAND from the
showing the PORTS of

IRISH PORTS.	CATTLE.					SHEEP.		
	Fat.	Stores.	Other Cattle.	Calves.	Total.	Sheep.	Lambs.	Total.
BELFAST, .	—	—	—	—	—	—	—	—
DUBLIN, .	—	—	—	—	—	—	—	—
Total, .	—	—	—	—	—	—	—	—

RETURN of the NUMBER of ANIMALS IMPORTED into IRELAND from the
showing the PORTS of EMBARKATION

ISLE OF MAN PORT.	CATTLE.					SHEEP.		
	Fat.	Stores.	Other Cattle.	Calves.	Total.	Sheep.	Lambs.	Total.
DOUGLAS, .	—	—	—	—	—	—	—	—

ISLE OF MAN during the Three Months ended 31st MARCH, 1909.
EMBARKATION in IRELAND.

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	IRISH PORTS.
Fat.	Stores.	Total.		Stallions.	Mares.	Geldings.	Total.				
-	-	-	1	1	-	-	-	-	-	76	BELFAST.
-	-	-		1	-	-	-	-	-	61	DUBLIN.
-	-	-	1	1	-	-	-	-	-	137	TOTAL.

ISLE OF MAN during the Three Months ended 31st MARCH, 1909,
in the ISLE OF MAN.

[illegible]

ISLE OF MAN during the Three Months ended 31st MARCH, 1909,
DEBARKATION in IRELAND.

SWINE.				HORSES.						
Fat.	Stores.	Total.	Goats.	Stallions.	Mares.	Geldings.	Total.	Mules or Jennets.	Asses:	Total Animals.
—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	BELFAST. DUBLIN.
—	—	—	—	—	—	—	—	—	—	TOTAL.

ISLE OF MAN during the Three Months ended 31st MARCH, 1909,
in the ISLE OF MAN.

[illegible]

COASTING AND

RETURN of the NUMBER of ANIMALS SHIPPED to and from Places in
the Places of Embarkation

IRISH PORTS.	CATTLE.					SHEEP.			SWINE.		
	Fat.	Stores.	Other Cattle.	Calves.	Total.	Sheep.	Lambs.	Total.	Fat.	Stores.	Total.
Cork to Aghada Pier, .	-	-	-	22	22	-	-	-	-	-	-
„ to Belfast, .	-	-	-	-	-	-	-	-	-	-	-
„ to Spike Island, .	-	-	-	-	-	-	-	-	-	-	-
„ to Queenstown, .	-	-	-	1	1	3	-	3	2	-	2
„ to Waterford, .	-	-	-	-	-	-	-	-	-	-	-
Total, . . .	-	-	-	23	23	3	-	3	2	-	2
Aghada Pier to Cork, .	-	-	-	-	-	95	-	95	455	3	458
Dublin „ . . .	-	-	-	-	-	-	-	-	-	-	-
Spike Island „ . .	-	-	-	-	-	-	-	-	11	-	11
Queenstown „ . .	-	-	-	-	-	-	-	-	35	-	35
Waterford „ . . .	-	-	-	-	-	-	-	-	-	-	-
Total, . . .	-	-	-	-	-	95	-	95	501	3	504
Waterford to Ballyhack, .	-	8	-	39	47	-	-	-	-	2	2
„ to Belfast, . . .	-	-	-	-	-	-	-	-	-	-	-
„ to Duncannon, .	-	50	-	64	114	-	-	-	-	17	17
Total, . . .	-	58	-	103	161	-	-	-	-	19	19
Ballyhack to Waterford, .	166	40	-	-	206	100	-	100	145	-	145
Belfast to Waterford, .	-	-	-	-	-	-	-	-	-	-	-
Duncannon to Waterford, .	79	-	-	-	79	2	-	2	501	-	501
Kilrush to Limerick, .	-	145	-	-	145	2	-	2	2,106	-	2,106
Kildysart, „ . . .	-	-	-	-	-	-	-	-	6	-	6
Kilkee, „ . . .	-	47	-	-	47	-	-	-	280	-	280
Portumna, „ . . .	-	-	-	-	-	-	-	-	450	-	450
Tarbert, „ . . .	-	-	-	-	-	-	-	-	-	-	-
Banagher, „ . . .	-	-	-	-	-	-	-	-	200	-	200
Total, . . .	-	192	-	-	192	2	-	2	3,042	-	3,042
Greencastle to Greenore, .	-	-	-	-	-	31	-	31	20	-	20
Greenore to Greencastle, .	-	-	-	-	-	-	-	-	-	-	-
Londonderry to Moville, .	4	-	-	2	6	12	-	12	-	-	-
Moville to Londonderry, .	6	182	2	-	190	11	-	11	-	-	-
Ballina to Sligo, . .	-	-	-	-	-	-	-	-	-	-	-
Belmullet „ . . .	-	1	3	-	4	-	-	-	505	-	505
Total, . . .	-	1	3	-	4	-	-	-	505	-	505
Milford to Mulroy, . .	2	-	-	-	2	-	-	-	-	4	4
Leithbeg to Mulroy, . .	1	6	-	-	7	-	-	-	-	-	-
Mulroy to Portrush, . .	-	26	-	-	26	-	-	-	-	-	-
Sligo to Ballina, . . .	-	4	-	-	4	-	-	-	-	-	-
Londonderry to Mulroy, .	-	-	-	-	-	-	-	-	-	-	-
Total, . . .	258	509	5	128	900	256	-	256	4,716	28	4,742

INLAND NAVIGATION.

Ireland during the Three Months ended 31st March, 1909, showing
and Debarkation.

Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	IRISH PORTS.
	Stallions.	Mares.	Geldings.	Total.				
-	-	-	1	1	-	-	23	Cork to Aghada Pier.
-	-	-	-	-	-	-	-	" to Belfast.
-	-	-	-	-	-	-	-	" to Spike Island.
-	-	-	-	-	-	-	6	" to Queenstown.
-	-	1	2	3	-	-	3	" to Waterford.
-	-	1	3	4	-	-	32	Total.
-	-	-	-	-	-	-	553	Aghada Pier to Cork
-	-	-	-	-	-	-	-	Dublin "
-	-	-	-	-	-	-	11	Spike Island "
-	-	-	-	-	-	-	35	Queenstown "
-	-	-	-	-	-	-	-	Waterford "
-	-	-	-	-	-	-	599	Total.
-	-	-	1	1	-	-	50	Waterford to Ballyhack.
-	-	5	7	12	-	-	12	" to Belfast.
-	-	1	1	2	-	1	134	" to Duncannon.
-	-	6	9	15	-	1	196	Total.
-	-	-	-	-	-	-	451	Ballyhack to Waterford.
-	-	-	-	-	-	-	-	Belfast to Waterford.
-	-	-	1	1	-	-	583	Duncannon to Waterford.
-	-	-	-	-	-	-	2,253	Kilrush to Limerick.
-	-	-	-	-	-	-	6	Kildysart "
-	-	-	-	-	-	-	327	Kilkee "
-	-	-	-	-	-	-	450	Portumna "
-	-	-	-	-	-	-	-	Tarbert "
-	-	-	-	-	-	-	200	Banagher "
-	-	-	-	-	-	-	3,236	Total.
-	-	-	-	-	-	-	51	Greencastle to Greenore.
-	-	-	-	-	-	-	-	Greenore to Greencastle.
-	-	-	-	-	-	-	18	Londonderry to Moville.
-	-	-	-	-	-	-	201	Moville to Londonderry.
-	-	1	1	2	-	-	2	Ballina to Sligo.
-	-	-	-	-	-	-	509	Belmullet "
-	-	1	1	2	-	-	511	Total.
-	-	-	-	-	-	-	6	Milford to Mulroy.
-	-	-	-	-	-	-	7	Leithbeg to Mulroy.
-	-	-	1	1	-	-	27	Mulroy to Portrush.
-	-	-	-	-	-	-	4	Sligo to Ballina.
-	-	-	-	-	-	-	-	Londonderry to Mulroy.
-	-	8	15	23	-	1	5,922	Total.

RETURN of the NUMBER of HORSES EXPORTED from IRELAND through GREAT BRITAIN to the COLONIES and FOREIGN COUNTRIES during the THREE MONTHS ended 31st MARCH, 1909, showing the Ports of Embarkation in Ireland.

PORTS.	Number of Horses.			
	Stallions.	Mares.	Geldings.	Total.
Belfast,	—	83	72	155
Cork,	—	—	—	—
Dublin,	—	33	20	53
Dundalk,	—	196	124	320
Greenore,	—	80	30	110
Waterford,	—	29	60	89
Total,	—	421	306	727

RETURN of the NUMBER of HORSES IMPORTED into IRELAND through GREAT BRITAIN from the COLONIES and FOREIGN COUNTRIES during the THREE MONTHS ended 31st MARCH, 1909, showing the Ports of Debarkation in Ireland.

PORTS.	Number of Horses.			
	Stallions.	Mares.	Geldings.	Total.
Belfast,	—	—	8	8
Dublin,	—	4	3	7
Waterford,	—	—	—	—
Total,	—	4	11	15

RETURN of the NUMBER of HORSES IMPORTED into IRELAND direct from FOREIGN COUNTRIES during the THREE MONTHS ended 31st MARCH, 1909, showing the Ports of Debarkation in Ireland.

PORTS.	Number of Horses.			
	Stallions.	Mares.	Geldings.	Total.
Belfast,	—	5	4	9
Portrush,	—	—	—	—
Total,	—	5	4	9

EMIGRATION FROM IRELAND.

TABLE showing, by Destinations, the Numbers of Emigrants (Natives of Ireland) who left the Ports of Ireland during the months of January, February, and March, 1909, and the total for the Three Months ended the 31st March, 1909, together with the total Number of Emigrants in each of the corresponding periods of the year 1908.

DESTINATION.	January, 1909.	February, 1909.	March, 1909.	Three Months ended 31st March, 1909.
FOREIGN COUNTRIES : —				
America (U.S.), . . .	329	457	1,327	2,113
Canada,	34	70	271	375
South Africa,	4	12	7	23
Australia,	98	104	41	243
New Zealand,	31	24	12	67
Other Countries, . . .	17	6	11	34
Total,	513	673	1,669	2,855
GREAT BRITAIN : —				
England and Wales, . .	134	109	183	426
Scotland,	80	102	93	275
Total,	214	211	276	701
General Total for 1909.	727	884	1,945	3,556
General Total for 1908,	641	934	1,881	3,456

The figures are subject to revision in the Annual Report.

The figures in the above Table have been extracted from the Returns published by the Registrar-General for Ireland.

ACCOUNT showing the QUANTITIES of certain kinds of AGRICULTURAL
into Ireland in each WEEK from

ARTICLES.	WEEK ENDED				
	2nd Jan.	9th Jan.	16th Jan.	23rd Jan.	30th Jan.
ANIMALS LIVING—					
Horses, No.	—	—	—	—	—
FRESH MEAT—					
Beef (including refrigerated and frozen), cwt.	—	—	4	—	—
Mutton, " " " "	—	—	310	—	—
Unenumerated, " " " "	—	—	11	—	—
SALTED OR PRESERVED MEAT—					
Bacon, cwt.	—	—	—	—	—
Beef, "	—	—	—	—	—
Hams, "	3	—	—	—	—
Pork, "	75	—	—	—	—
Meat, unenumerated, Salted or Fresh, cwt.	—	—	—	—	—
Meat, preserved otherwise than by salting (including tinned and canned), cwt.	88	—	—	137	—
DAIRY PRODUCE AND SUBSTITUTES—					
Butter, cwt.	—	—	—	—	—
Margarine, "	69	6	85	77	73
Cheese, "	6	—	2	—	—
Milk, Condensed, "	104	—	126	105	46
" Cream, "	—	—	—	—	—
" Preserved, other kinds, "	—	—	—	—	—
EGGS, gt. hunds.	504	888	—	1,296	240
LARD, cwt.	201	—	2,045	77	—
CORN, GRAIN, MEAL AND FLOUR—					
Wheat, cwt.	46,000	64,300	95,200	139,200	59,500
Wheat Meal and Flour, "	47,100	5,700	30,600	59,800	2,100
Barley, "	10,700	—	—	60,000	—
Oats, "	25,200	—	—	11,400	—
Peas, "	50	60	110	60	80
Beans, "	—	—	—	—	—
Maize or Indian Corn, "	261,000	237,400	54,000	136,700	131,800
FRUIT, RAW—					
Apples, cwt.	—	—	—	—	—
Currants, "	—	—	—	—	—
Gooseberries, "	—	—	—	—	—
Pears, "	—	—	—	—	—
Plums, "	—	—	—	—	—
Grapes, "	—	—	—	—	—
Lemons, "	—	—	—	—	—
Oranges, "	—	—	—	—	—
Strawberries, "	—	—	—	—	—
Unenumerated, " " " "	—	—	—	—	—
HAY, tons	—	—	—	—	—
STRAW, "	—	—	—	—	—
MOSS LITTER, "	111	40	71	81	—
HOPS, cwt.	—	—	—	—	—
VEGETABLES, RAW—					
Onions, bushels.	3,920	2,136	970	4,131	2,390
Potatoes, cwt.	—	—	—	—	—
Tomatoes, "	—	—	—	—	—
Unenumerated, £	—	—	—	9	—
VEGETABLES DRIED, cwt.	—	—	—	—	—
Preserved by Canning, "	—	—	—	—	—
POULTRY AND GAME, £	—	—	—	—	—

* This Table is confined to the Imports of certain kinds of Agricultural Produce into
to a request from this Department kindly consented to separate the Irish Imports (direct)
form of Weekly Returns.

PRODUCE Imported direct (*i.e.* from the Colonies or Foreign Countries)
2nd January, 1909, to 27th March, 1909.*

WEEK ENDED.							
6th Feb.	13th Feb.	20th Feb.	27th Feb.	6th Mar.	13th Mar.	20th Mar.	27th Mar.
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	30	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	83	-	-	103	-	50	-
-	-	-	-	5	-	-	-
72	75	74	80	63	82	113	83
280	-	-	8	5	-	-	-
97	95	40	36	107	155	17	65
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
144	204	108	-	-	-	-	-
7	383	-	6	-	-	100	394
-	-	-	-	-	-	-	-
24,400	142,400	72,700	-	82,300	241,200	61,700	102,700
32,500	28,400	2,300	4,000	24,300	2,300	24,500	3,100
123,500	-	-	116,700	4,000	-	-	-
-	100	10,000	-	-	-	-	-
70	30	130	20	30	60	60	20
111,000	313,100	44,000	190,500	240,900	159,000	117,400	92,400
-	84	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	24
-	-	-	-	-	-	-	-
61	50	46	93	30	40	20	61
348	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
1,894	830	1,900	770	490	80	500	400
-	-	-	-	-	-	-	-
-	-	4	-	-	5	2	-
-	-	-	-	-	-	-	-
-	-	-	-	40	-	-	-
-	-	-	-	-	-	-	-

Ireland from the Colonies and Foreign Countries. The Board of Customs have in answer from those of the United Kingdom, and to supply this Department with them in the

Statistics and Intelligence Branch,
Department of Agriculture
and Technical Instruction for Ireland.

STATEMENT of the TOTAL QUANTITY and VALUE of the FISH returned as landed on the IRISH COASTS during the Month and Three Months ended 31st March, 1909, compared with the corresponding Periods of the Year 1908.

	March.		Three Months ended 31st March.	
	1909.	1908.	1909.	1908.
QUANTITY.				
	Cwts.	Cwts.	Cwts.	Cwts.
Brill,	22	62	165	189
Soles,	356	414	691	617
Turbot,	51	27	157	118
Total Prime Fish,	429	503	1,013	924
Cod,	6,244	4,117	14,086	8,581
Conger Eel,	1,327	679	3,041	1,944
Haddock,	2,186	2,420	6,719	7,686
Hake,	1,186	953	2,129	1,825
Herrings,	2,530	376	105,574	34,195
Ling,	1,850	2,617	3,741	4,337
Mackerel,	28	1,959	15,246	9,553
Plaice,	1,010	2,394	2,389	5,551
Ray or Skate,	1,723	1,431	3,374	2,782
Sprats,			704	
Whiting,	1,568	1,339	3,084	4,128
Fish not separately distinguished, except Shell Fish,	1,916	1,680	4,603	3,474
Total,	21,997	20,428	166,603	84,980
No.				
Shell Fish :—	No.	No.	No.	No.
Crabs,	2,160	390	2,818	390
Lobsters,	3,283	1,999	6,817	5,010
Oysters,	80,776	17,892	131,320	74,374
Mussels,	827	232	1,853	2,137
Other Shell Fish,	1,473	1,265	4,860	4,064
VALUE.				
	£	£	£	£
Brill,	34	88	228	276
Soles,	1,430	2,213	2,711	3,027
Turbot,	216	95	615	428
Total Prime Fish,	1,680	2,401	3,554	3,731
Cod,	2,790	1,899	6,026	4,680
Conger Eel,	668	351	1,348	1,065
Haddock,	1,442	1,566	4,198	4,561
Hake,	856	604	1,723	1,489
Herrings,	708	122	27,112	11,336
Ling,	632	702	1,402	1,674
Mackerel,	17	1,140	5,566	4,486
Plaice,	1,230	2,557	2,606	5,837
Ray or Skate,	452	281	849	635
Sprats,			81	
Whiting,	941	847	2,286	2,570
Fish not separately distinguished, except Shell Fish,	1,056	729	2,354	1,791
Total,	12,481	13,189	60,005	43,855
Shell Fish :—				
Crabs,	5	2	7	2
Lobsters,	133	75	261	196
Oysters,	100	25	183	125
Mussels,	65	16	137	90
Other Shell Fish,	386	316	1,344	947
Total,	689	434	1,932	1,360
Total Value of Fish landed,	13,170	13,623	61,937	45,215

NOTE.—The above figures are subject to correction in Annual Returns,

STATEMENT of the TOTAL QUANTITY and VALUE of the Fish returned as landed on the SCOTTISH COASTS during the Month and Three Months ended 31st March, 1909, compared with the corresponding periods for the Year 1908.

	March.		Three Months ended 31st March	
	1909.	1908.	1909.	1908.
QUANTITY.				
	Cwts.	Cwts.	Cwts.	Cwts.
Herrings,	24,665	62,544	262,054	395,731
Sprats,	775	769	2,019	3,323
Sparlings,	9	8	55	32
Mackerel,	899	389	5,610	4,594
Cod,	86,238	98,798	205,322	195,987
Ling,	21,428	15,076	51,018	36,836
Torsk (Tusk),	2,546	1,181	4,750	2,654
Saith (Coal Fish),	19,171	12,291	59,382	34,405
Haddock,	87,966	95,481	266,231	277,808
Whiting,	9,362	13,181	31,213	44,070
Conger Eel,	5,755	7,264	17,311	20,873
Turbot,	444	438	1,459	1,212
Halibut,	3,077	3,513	5,242	5,837
Lemon Soles,	2,196	1,499	5,807	4,769
Flounders, Plaice, Brill,	4,399	6,169	15,988	16,850
Skate and Rays,	17,131	21,016	42,726	48,516
Fish not separately distinguished, except Shell Fish,	7,224	8,028	23,452	27,624
Total,	293,285	345,635	999,639	1,121,121
Shell Fish :—	No.	No.	No.	No.
Crabs,	98,774	134,072	412,192	398,316
Lobsters,	33,924	36,174	120,394	98,093
Oysters,	239,318	76,830	604,537	226,810
	Cwts.	Cwts.	Cwts.	Cwts.
Clams,	760	1,465	3,163	4,795
Mussels,	5,941	6,524	33,058	29,507
Other Shell Fish,	6,431	7,703	15,987	15,863
VALUE.				
	£.	£.	£.	£.
Herrings,	6,177	9,283	64,262	82,955
Sprats,	93	115	306	511
Sparlings,	42	43	512	110
Mackerel,	441	172	2,867	1,029
Cod,	32,785	36,024	91,134	91,394
Ling,	6,201	5,040	15,841	13,238
Torsk (Tusk),	709	152	1,346	880
Saith, (Coal Fish),	2,674	2,087	10,135	7,187
Haddock,	45,342	49,660	139,729	156,861
Whiting,	4,039	5,501	13,879	18,858
Conger Eel,	1,909	2,708	5,833	8,251
Turbot,	1,488	1,659	5,136	4,807
Halibut,	6,238	7,014	11,982	13,467
Lemon Soles,	5,157	3,689	14,567	12,407
Flounders, Plaice, Brill,	5,751	7,322	18,732	21,282
Skate and Rays,	4,378	6,025	11,587	15,208
Fish not separately distinguished except Shell Fish,	3,477	4,813	13,009	16,573
Total,	126,901	141,510	420,497	465,016
Shell Fish :—				
Crabs,	523	823	2,141	2,201
Lobsters,	2,024	2,130	5,658	5,690
Oysters,	838	294	2,173	1,233
Clams,	119	220	479	715
Mussels,	291	327	1,454	1,355
Other Shell Fish,	1,414	1,928	3,645	4,039
Total,	5,209	5,722	15,550	15,233
Total Value of Fish landed,	132,110	147,232	436,047	480,249

NOTE.—The above figures are subject to correction in the Annual Returns.

DEPARTMENT OF AGRICULTURE AND TECHNICAL
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Vol. IX.



No. 4.

DEPARTMENT OF AGRICULTURE

AND

TECHNICAL INSTRUCTION FOR IRELAND.

JOURNAL.

**Meeting of the Council of Agriculture—The Vice-President's Address
—Store Cattle or Butter, Bacon and Eggs?—Protection of
Woodlands in Ireland—Winter Milk Production—Winter Calf-
Rearing—Winter Egg Records—Northlands School of House-
wifery, Londonderry—Crop Report—Fruit Crop Report—Potato
Blight—The Meat Supply of the United Kingdom—Official
Documents—Notes and Memoranda—Statistical Tables.**

NINTH YEAR,

NO. 4.

JULY, 1909.



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NOTICE.

Communications respecting the literary contents of this JOURNAL should be addressed to the Superintendent of the Statistics and Intelligence Branch, Department of Agriculture and Technical Instruction for Ireland, Upper Merrion-street, Dublin.

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THE COUNCIL OF AGRICULTURE.

The fifteenth meeting of the Council of Agriculture was held on Wednesday, 12th May, 1909, in the Royal University of Ireland, Earlsfort-terrace, Dublin.

The chair was taken at 11 o'clock by the Right Hon. T. W. Russell, M.P., Vice-President of the Department.

The following were present:—

Representing the Department.—The Vice-President; Mr. T. P. Gill, Secretary; Mr. J. R. Campbell, Assistant Secretary in respect of Agriculture; Mr. George Fletcher, Assistant Secretary in respect of Technical Instruction; Mr. R. Cantrell, I.S.O., Chief Clerk; Mr. W. G. S. Adams, Superintendent of the Statistics and Intelligence Branch; Mr. J. S. Gordon, Chief Agricultural Inspector; Mr. J. P. Walsh, Clerk in Charge of Accounts; Mr. J. D. Daly, Senior Staff Officer; Mr. T. Butler; Mr. J. V. Coyle; Mr. A. Kelly; Mr. John Hogan; Mr. H. G. Smith; Mr. R. H. Lee; and Mr. E. O'Neill.

MEMBERS OF COUNCIL, ACCORDING TO PROVINCES.

Leinster.

John Bolger; Algernon T. F. Briscoe, J.P.; Stephen J. Brown, M.A., J.P.; Captain Loftus A. Bryan, J.P., D.L.; John Butler, J.P.; Thomas J. Byrne, J.P.; Thomas M. Carew; Denis J. Cogan; William M. Corbet; Thomas W. Delany; James G. Dooley; Robert Downes, J.P.; Colonel Nugent T. Everard, D.M.L.; Rev. T. A. Finlay, M.A., F.R.V.L.; The Right Hon. Lord Frederick FitzGerald, J.P.; James Galvin; Patrick Hanlon; Michael J. Horan, J.P.; Patrick J. Kennedy, J.P.; Nicholas B. King, J.P.; James M'Carthy, J.P.; James MacMahon, J.P.; The Right Hon. Viscount Massereene and Ferrard, D.S.O., J.P.; Joseph Mooney, J.P.; George F. Murphy, J.P.; Patrick J. O'Neill, J.P.; Charles H. Peacocke, J.P.; Henry Reynolds; William R. Ronaldson; James Ross, J.P.; Hugh Wallace.

Ulster.

The Right Hon. Thomas Andrews, P.C., D.L.; William Bailie; Frank Barbour; Harold A. M. Barbour, M.A.; Hugh T. Barrie, J.P., M.P.; Rev. E. F. Campbell, M.A.; Alexander L. Clark, J.P.; Joseph Davison; Robert T. Huston, M.R.C.V.S.; Francis J. Lynch; John S. F. M'Cance, J.P.; Thomas A. M'Clure, J.P.; The Right Rev. Monsignor M'Glynn, J.P., V.G.; T. P. M'Kenna, J.P.; H. de F. Mont-

gomery, J.P., D.L.; George Murnaghan, M.P.; Rev. Lorcan O'Ciarain, P.P.; Captain John Patrick, J.P.; John Porter Porter, J.P., D.L.; Colonel R. G. Sharman-Crawford, J.P., D.L.; Michael Shields, J.P.; William Smyth, J.P.; Captain T. Butler Stoney, J.P., D.L.; Thomas Toal, J.P.

Munster.

James Byrne, J.P.; Captain William C. Coghlan, J.P.; Maurice Connery, M.P., J.P.; Thomas Corcoran, J.P.; Edmond Cummins, J.P.; Thomas Duggan; Patrick J. Hogan; Most Rev. Denis Kelly, D.D., Lord Bishop of Ross; William M'Donald, J.P.; Michael Mescal, J.P.; Patrick Moclair; Michael J. Nolan, J.P.; Edmund Nugent, J.P.; Cornelius O'Callaghan, J.P.; William W. O'Dwyer, J.P.; David Leo O'Gorman; George O'Gorman; Thomas Power; Hugh P. Ryan; Timothy Sheehy; Michael Slattery, George F. Trench, J.P.

Connacht.

P. J. Costello, J.P.; Very Rev. Canon Daly, D.D.; Rev. Joseph G. Digges, M.A.; John Galvin; Sir Josslyn Gore-Booth, Bart, D.L.; James P. MacGuire; Rev. P. J. Manly, C.C.; Daniel Morrin; Rev. Philip J. Mulligan, Adm.; Colonel John P. Nolan, J.P.

Mr. J. D. Daly acted as Secretary to the meeting.

The minutes of the fourteenth meeting, 24th November, 1908, a copy of which had been sent to each member of the Council, were taken as read, and were signed as correct.

The Vice-President delivered his Address.*

The Council resolved itself into Provincial Committees for the purpose of electing members on the Agricultural Board and on the Board of Technical Instruction.

The Council re-assembled at 1.30 p.m.

The Vice-President announced the result of the elections to the Boards as follows:—

AGRICULTURAL BOARD.

Leinster.—Mr. Patrick J. O'Neill, J.P.; Mr. Robert Downes, J.P.

Ulster.—Mr. H. DE F. Montgomery, D.L.; Mr. John S. F. M'Cance, J.P.

Munster.—Most Rev. Denis Kelly, D.D., Lord Bishop of Ross; Mr. William M'Donald, J.P.

Connacht.—Most Rev. John Healy, D.D., Lord Archbishop of Tuam; Very Rev. Canon Daly, D.D.

* See pp. 630 *et seq.*

BOARD OF TECHNICAL INSTRUCTION.

Leinster.—Rev. T. A. Finlay, F.R.U.I.

Ulster.—Mr. Frank Barbour.

Munster.—Mr. Thomas Power.

Connacht.—Most Rev. John Clancy, D.D., Lord Bishop of Elphin.

The Vice-President said that the following were nominated by the Department as members of the Agricultural Board:—

Leinster.—Colonel N. T. Everard, H.M.L.

Ulster.—Mr. George Murnaghan, M.P.

Munster.—Rt. Hon. Lord Monteagle, K.P.

Connacht.—Sir Josslyn Gore-Booth, Bart., D.L.

The Vice-President said that he was not yet in a position to announce the names of the gentlemen nominated by the Department as members of the Board of Technical Instruction.

The following resolution was proposed by Mr. Joseph Mooney, J.P., seconded by Mr. P. J. O'Neill, J.P., and passed unanimously:—

“That the Vice-President's Address to the Council of Agriculture be printed, and that copies be sent to all members of Parliament for Irish Constituencies.”

The Council proceeded to consider the following question which was submitted by the Department for discussion:—

“The comparative merits of store cattle raising and of farming for the supply of such produce as butter, bacon, and eggs.”

At the request of the Vice-President, Mr. J. R. Campbell, B.Sc., Assistant Secretary in respect of Agriculture, read a paper on the subject.

The question was debated at considerable length.

At the close of the debate Mr. Campbell dealt with certain points that had arisen in the course of the discussion.

The Most Rev. Dr. Kelly, Lord Bishop of Ross, drew attention to the importance of the Winter Agricultural Classes and moved the following resolution:—

“That this Council strongly approves of the system of Winter Agricultural Classes, and calls upon the County Committees to develop and extend it.”

The resolution was seconded by Mr. Alex. L. Clark, J.P.

After considerable discussion the resolution was put and passed unanimously.

The following resolution proposed by Mr. John Butler, J.P., seconded by Mr. Patrick Hanlon was passed:—

“That the dairy industry and store cattle trade, forming as they do the mainstay of our agricultural life, require immediate and thorough development; and that in the opinion of this Council the Department should take immediate steps to have ‘The Irish Dairy Herd Scheme’ brought home to the Dairy Farmers through the several County Committees as the most practical and efficient means of developing these industries.”

The following notices standing on the Agenda paper in the name of Mr. William Field, M.P., were not dealt with, Mr. Field being unavoidably absent on Parliamentary business:—

(i.) To call attention to the necessity for dealing with the question of noxious weeds.

(ii.) To call attention to the Department’s Experiments at Ballyhaise Agricultural Station with regard to warbles in cattle.

(iii.) To call attention to certain matters relating to Irish Fisheries.

(iv.) “That this meeting requests the Government to bring in a Bill to prohibit dealings in ‘Futures’ in agricultural products; and also to consult and co-operate with other Governments to prevent international gambling, especially in food, stuffs, etc.”

(v.) “That this meeting is of opinion that a Produce Commissioner for Ireland should be appointed to act in Great Britain, with functions similar to those performed by the New Zealand Produce Commissioner in London.”

The following resolution, standing on the Agenda paper in the name of Mr. Stephen J. Brown, J.P., was proposed by Mr. R. Downes, J.P., seconded by Mr. William Ronaldson, and adopted:—

“That the proposed system of requiring farmers to give a warranty as to the freedom of their cattle from disease is highly unsatisfactory from the point of view of the farmer, and that a more equitable method of dealing with the matter should be devised.”

The following resolution proposed by Mr. William Ronaldson, and seconded by Captain W. C. Coghlan, J.P., was passed unanimously:—

“That the Department of Agriculture should endeavour to promote a universal system of weights and measures.”

The following resolution proposed by Mr. Timothy Sheehy, seconded by Mr. Thomas Power, was passed unanimously:—

“That as a tariff of 8s. a barrel imposed on salt mackerel imported into the United States has, in consequence of the fall in

price of that article, rendered that branch of Irish fishing unprofitable, and must, in the near future, lead to its discontinuance; and as the fish merchants at New York have petitioned the Committee charged with the revision of the tariffs for the removal, or substantial reduction, of that tariff, 'as the catch of mackerel in American waters is small, and as a large part of it is consumed fresh, large quantities have to be imported from Ireland and Norway,' this Council is of opinion that representations should be addressed to the American Government with a view to the removal of the tariff on salt mackerel, in order to continue and secure that article of food for the poorer American citizens, and help Irish fishing without injury to any American industry."

The Council adjourned at 5 o'clock.

THE VICE-PRESIDENT'S ADDRESS TO THE COUNCIL OF AGRICULTURE.

MY LORDS AND GENTLEMEN,—I have the privilege and pleasure of addressing to-day what is, in a very real sense, a new Council. It is quite true that the Council as it now stands is largely composed of those who were members of its predecessor; but in twenty-three cases changes have taken place. The County Councils have altered their representatives to the extent of thirteen members, and the changes for which the Department is responsible number ten. So that practically one-fourth of the Council consists of new members. I extend the heartiest welcome to all these gentlemen, and I feel assured that the Council will be even stronger for the infusion of this new element.

ELECTORAL FUNCTIONS OF THE COUNCIL.

As on previous occasions of this kind, and strictly following precedent, the first business in which you will have to take part is the election of eight members to the Agricultural Board, viz., two for each province. The members of the Council will, therefore, on the conclusion of my address, resolve themselves into Provincial Committees and retire to their several rooms, with a view to making those appointments, an official of the Department attending upon, and acting as Secretary to, each Committee. In addition to this duty, four members will also have to be similarly elected to the Board of Technical Instruction, viz., one for each province. The Committee will thus have to elect eleven representatives on these two Boards. When this work is done and the returns handed in, I shall be prepared to name the gentlemen I propose to nominate to the Agricultural Board on behalf of the Department; and the machinery for the next triennial period will then be complete.

THE LAND BILL AND THE DEPARTMENT

The first subject to which I desire to direct the attention of the Council is one of great importance to the work of the Department. I refer to the Irish Land Bill. So far as that measure is controversial in a political sense, it can, I need hardly say, have no place in our deliberations. My remarks, therefore, will be strictly confined to the bearing which the measure has upon our own particular sphere of work. It will be remembered that during the sitting

of the Dudley Commission some of the principal officers of the Department were called upon to give evidence, and, as is clear from their report, the Commission saw that whenever legislation took place, the relations between the Department and the Congested Districts Board were of so delicate a nature that the utmost care would require to be taken in dealing with them. As a result of a conference with the Chief Secretary for Ireland, a meeting took place between representatives of the Board and of the Department. The Most Rev. Dr. O'Donnell, Bishop of Raphoe, and Sir James Dougherty represented the Board, and Mr. Gill and I did duty for the Department. The main difficulties of a controversial character were, I am glad to say, happily and harmoniously arranged. The results of this conference are embodied in clauses 45, 46, and 47 of the Land Bill. Clause 45 transfers certain powers and duties of the Congested Districts Board to the Department; clause 46 establishes a consultative committee composed of members of the two departments, with a view to aiding and developing sea fisheries in the areas where they have concurrent powers or duties; and clause 47 set aside, out of the proposed grant to the Congested Districts Board, the sum of £19,000 to be paid to the Department annually in view of the transfer of the duties already referred to. With regard to this last item, the Council will bear in mind that for some six years the Department, under an arrangement with the Congested Districts Board, has been largely doing the very work in the congested districts which it is now proposed to transfer legally to it. When this work was first transferred to the Department only £2,000 a year was transferred from the Congested Districts Board for doing it. But the work has cost about £10,000 a year—last year it cost £11,000—and that money the Department has had to provide by drawing upon the funds which were specifically voted by Parliament for the parts of Ireland other than the congested districts. The Agricultural Board consented to this course, on the one hand in the faith that the moneys thus advanced would be restored to the parts of the country to which they properly belonged, and on the other hand through their strong feeling that they should not let the congested districts suffer while this financial question was being settled. But last year this Board had to notify the Congested Districts Board that they could not continue this contribution after the present season, as the reserve on which they had been drawing was being rapidly depleted. The arrangement under the new Bill does not recoup the Department for its expenditure during the past six years. To that extent the other parts of Ireland remain at a loss

in favour of the congested districts. But the Bill provides funds for continuing the work; and it provides something more. If you deduct the cost of the work now being done, viz., £11,000, from the amount provided in the Bill, you will see that £8,000 is provided for *new* work—£8,000 remember, not £19,000. That £8,000 is the net sum of what may be called new money for new work. It is most important that this should be clearly understood. The sum is not a large one, and it will appear smaller still when it is remembered that the area over which the Department is to apply it has been greatly extended as compared with the area of the present congested districts. I have to make clear the position of my own Department; and, speaking for the Department, I cannot say that the provision is entirely satisfactory. But what I rely on is that, under the Bill, the Department and the Congested Districts Board—and with them, too, I may say the Estates Commissioners—will be able to understand each other in a better and more practical manner; to readjust their relations, financial and other, from time to time; and to work together harmoniously and loyally, as we shall all strive to do, for the common good of the country. There are other provisions in the Bill bearing upon the work of the Department, which are also important. Clauses 18 and 19 confer powers upon the Department, and upon Irish local authorities, to acquire land for forestry and other purposes, to obtain advances for its purchase from the Land Commission, and to hold it as trustees for the State. This meets what has long been a pressing difficulty, and it will enable the Department to commence in earnest the work of afforestation.

TREASURY GRANT FOR FORESTRY.

Whilst I am on this subject, I am glad to be able to announce another important step forward. At our meeting last November I mentioned that the Departmental Committee on Irish Forestry, the appointment of which had been announced some six months previously, had completed its inquiry and presented its report. I am now in a position to inform the Council that the report of that Committee has already had some practical effect. The case it made out has been accepted as conclusive, and the Treasury have placed in this year's estimates a sum of money to enable the Department to deal, to a limited extent, with the most urgent part of the forestry problem as pointed out by the Committee—that is to say, with woods and forestry lands coming into the market under the Land Purchase Acts. This provision is quite apart from whatever share

Ireland may be entitled to of the provision for afforestation foreshadowed in the development scheme of the Budget; and it is, of course, only a limited provision. It is just an arrangement to meet promptly an immediate need, pending a more complete scheme. Its aim is to begin imposing some check on that destructive process so strongly described in the Committee's report, by which so many woodlands in the country are being wastefully cut down and wood-working industries dependent on them placed in danger of extinction. The effect of the arrangement, as approved by the Treasury, is to enable the Department, on behalf of the country, to purchase woods—paying for them by purchase instalments—in a certain specified class of cases coming through the hands of the Estates Commissioners, where nobody but the timber merchant was available before, and where no fate was in front of the wood but to be cut down and the timber shipped in the rough to England and Scotland. Where such woods as may be offered in these cases are worth preserving—and it should be remembered that every wood is not worth preserving from a business point of view—they can now be acquired by the Department as the representative of the nation, and maintained and developed on sound economic lines. The Department, under the Trustee clauses of the Act of 1903, which clauses will be further improved by amendments if Mr. Birrell's Bill passes into law, can become in effect a tenant purchaser in respect of such woods of this nature as it may think advisable to acquire and manage.

THE COUNTY COUNCILS AND FORESTRY.

Somewhat similar powers will also be conferred upon County Councils, to whom it will be open to promote local forestry schemes, with the approval and advice of the Department. It will be readily understood that it is only the larger woods that it would pay the Department to manage, and that the smaller woods are best dealt with by the County Councils. This was the plan recommended by the Forestry Committee, and the County Councils should now be interesting themselves with a view to acquiring suitable small woods and land for planting in their respective districts. Some counties, Kildare and Westmeath for example, have already made a beginning in this way; and the Department, under the new arrangement, have acquired some large woods in the South, and are in negotiation with regard to others. This gentlemen, you will agree with me, is an important announcement. True, the provision proposed by the Treasury is a small one at present, and I do not want to convey the

idea that anything more than some limited and cautious action will be possible in this direction. But it is the admission of a principle. It means the first step in an attempt—which I hope will be developed on a larger scale—to tackle as a practical matter the too long neglected problem of forestry in Ireland. I think that for once in a way we may give credit to our friends of the Treasury, whom we often abuse—and not without reason—we may give them credit for the readiness with which they have accepted and acted upon the conclusions of our Departmental Committee. I imagine it is almost without precedent—we have only to think of the usual fate of Commissions of Inquiry—to have a Commission eventuate so quickly in practical action. But, in my opinion, a large share of the credit must be given to the Committee itself, whose Chairman, Mr. Gill, and most of whose members I see around me at this moment. Their report, which I saw described the other day by a high forestry authority in London as “by far the most businesslike and practical” afforestation and timber-planting scheme that has yet been suggested for any of the four countries forming the United Kingdom,” was such a piece of work as to carry conviction to the soundest and most cautious business minds; and, what is more, I believe that its having stood that test has had a large share in preparing the way for the acceptance by the financial authorities of the great scheme which has since been adumbrated for the whole United Kingdom by the Chancellor of the Exchequer.

DEPARTMENTAL LEGISLATION.

Before I leave the subject of legislation, I ought to say that a question which has over and over again been the subject of resolutions at the Council meetings has been brought to a satisfactory conclusion. The Pharmacy Act of last Session, during its progress through the House of Lords, was, at the instance of the Department, made to apply to Ireland. A grievance which affected farmers in remote districts has thus been removed. Complaints were repeatedly made, both at this Council and elsewhere, that agriculturists in out-of-the-way places were unable to purchase sheep dips and other necessaries of the kind, unless by travelling twenty or thirty miles to the nearest chemist's shop. The hardship was so real that the law was constantly violated, and these poisonous articles were surreptitiously sold by unauthorised persons. The Pharmacy Act, passed since the last meeting of the Council, empowers the local authorities to licence suitable persons for the

sale of sheep dips and similar commodities, where necessary; and with the placing of this measure upon the Statute Book another of these questions which, with unfailing regularity, occupied the agenda of our proceedings has disappeared. During the present Session I propose to introduce the following Bills, all of which are ready for presentation and deal with matters that have long been discussed by the Council:—(1) A Fishery Bill dealing mainly with close time and the making of by-laws in connection therewith. (2) A Bill amending the Merchandise Marks Act, which will enable the Department to prosecute for offences under that statute. (3) A Defective Seeds and Noxious Weeds Bill. With regard to weeds I promised the Council in November last that a Bill would be promoted upon the subject. And, finally, I should like to deal with the question of how far it is possible to get accurate and precise returns of Irish imports and exports. The Council is aware that in recent years the Department has published Reports on the Trade Imports and Exports at Irish Ports. It has, however, been necessary to add to these reports a note to the effect that they are only approximately correct. What we have accomplished in this direction has been mainly due to the willingness of the Port and Harbour authorities, and the railway and shipping companies, to facilitate us in the compilation of these statistics. But compulsory powers are necessary, and as I am afraid that the obtaining of these powers involves questions that were not apparent at first sight—questions of high policy and even of an international character—a measure such as this is clearly more than a departmental Bill. I am in communication with the Government upon the matter, and shall lose no opportunity of pressing it to a satisfactory conclusion. With such means, however, as we have at our disposal, the Department has pushed ahead the work of compiling the existing records, which are so important to Irish agriculture and Irish manufacture. In little over two years four reports covering the trade of the years 1904, 1905, 1906, and 1907 have been issued. Before long we shall have the report on 1908 ready; and I may say this, that though 1908 was a black year in the annals of trade, and though Ireland, too, especially in the case of the linen trade, suffered in the general depression, our agricultural exports have, I am glad to say, come up very close to the high level of 1907.

THE POSITION OF THE FLAX INDUSTRY.

During the past year, and, indeed, for several years, the condition of the flax industry has caused serious discouragement to flax

growers, and given ground for anxious consideration to the Department. In spite of everything that has been done to arrest the decline, the area under flax has steadily diminished. The difficulty of obtaining the best seed, added to that of marketing and of price, have combined to make the solution of the problem a matter of great moment to the North of Ireland. It may appear like a counsel of despair, but I am not certain that the causes which have led to the present unsatisfactory state of affairs have yet been accurately diagnosed. Neither the growers nor the flax merchants are united in opinion upon the matter; and I have come to the conclusion that the first thing necessary is to get at the facts—to endeavour to find out why an industry so prosperous and so profitable in by-gone days gives these continued indications of decline. The prosperity of the linen trade is of such vital importance not only to Ulster, but also to Ireland as a whole, that every possible endeavour should be made to ascertain the reasons why the cultivation of flax is languishing so seriously, and what steps are necessary to arrest its threatened decay. I propose, therefore, as soon as possible, to ask the Treasury for sanction to appoint a Departmental Committee to visit the localities affected, and to take evidence from all concerned in the growth, manufacture and disposal of the crop. There are, I know, people who distrust commissions and committees of this kind; but I may point out that the value of these means of inquiry depends upon whether the inquisitors are appointed with a view to business or merely to delay or postpone action, legislative or administrative. So far as our own Department is concerned we have not any reason for complaint, but rather for congratulation, in regard to the Departmental Committees appointed up to the present. I have already referred to the Forestry Committee, which has paved the way for the settlement of one important question, and the good fruits of which are already being experienced. I hope that the Committee upon the dairying industry, to which I shall shortly refer, will be equally successful. And it will not be the fault of the Department if the proposed inquiry into the condition of the flax industry does not result in what everyone desires, a resuscitation that will tell with immeasurable benefit upon the agriculture of the North of Ireland.

THE DEFINITION OF CREAMERY BUTTER.

The Council will have seen in the Press notices of a Departmental Committee which I have appointed to inquire into certain matters relating to the dairying industry in Ireland. The matter of a proper

trade description of creamery butter is, owing to the position of dairying in our agricultural economy, of immense importance to Irish agriculturists. Every possible step has been taken by the Department, under the Merchandise Marks Act and other legislation, for the protection of the reputation of Irish butter against fraudulent competition. But it has been found in practice that the great obstacle to effective legal proceedings arises from the imperfect definition which applies to the different grades and qualities of butter. A great quantity of butter described as "creamery butter" is not entitled to that description at all. The difficulty of obtaining convictions in these cases of misdescription is practically insurmountable owing to the absence of a clear definition which the Courts will accept as representing the custom of the trade. With a view to ascertaining the best method of overcoming this difficulty, I have appointed a small Departmental Committee of Inquiry. As the question is one affecting not only Irish butter, but the butter trade of Great Britain generally, the Board of Agriculture and Fisheries in England agreed to nominate Mr. Haygarth Brown, their Superintending Inspector, as their representative on the Committee. The recommendations of the Committee may, in the case of the Departmental Committee on Preservatives appointed by the Local Government Board for England in 1899, be accepted in the law courts as settling trade descriptions, within the scope of the Committee's inquiry, for the purposes of the Merchandise Marks Act. This may obviate the necessity for further legislation; but the question is one of such serious importance, the injury caused to the Irish butter trade as things stand being so great, that if legislation should ultimately prove necessary, the Department will promote and press a Bill dealing with any points which may remain the subject of dispute.

PROTECTIVE WORK IN GREAT BRITAIN.

Whilst speaking in this connection, I may mention that the work of the Department's Inspector in Great Britain is being pursued with energy and success. There can be no doubt that this branch of the Department's activities, quite apart from any question of legal prosecutions, is exercising a most salutary and beneficial moral effect upon perpetrators of fraud at the expense of the Irish producer.

PREVENTION OF ADULTERATION AND FOOD FRAUDS.

As regards the administration of the Sale of Food and Drugs Acts, while the taking of samples of butter, etc., for analysis, is primarily

the duty of officers of the local authorities, numbers of samples are also obtained from time to time by officers employed by the Department. Further measures have recently been adopted by the Department to detect frauds in connection with butter and other produce in Ireland; and lately in Dublin convictions were obtained by the local authority, on evidence supplied by Departmental officers, in the case of seven shopkeepers, when fines ranging from £3 to £10 were imposed for selling and exposing for sale margarine as butter. It is, however, to be regretted that in many cases the fines imposed for offences under these Acts, with respect to such important articles of food as butter and milk, are so small as to have practically no deterrent effect. Magistrates in many cases apparently forget that it is the poor that are being robbed by this adulteration, and that leniency really amounts to a condonation of the fraud, and is wholly alien to the spirit of this class of legislation. A like activity has characterised the Department in its administration of the Fertilisers and Feeding Stuffs Act. Great progress has been made during the year in bringing home to farmers and shopkeepers the disadvantages of buying inferior imported articles. The Department has aided in several prosecutions under this statute, and has several others under consideration. This year, for the first time, the Department has issued a schedule of units of value for the purpose of valuing artificial manures. This in the hands of the Agricultural Instructors has been a most powerful weapon, and there are numerous instances where by its use a stop has been put to the sale of inferior goods. On the other hand, the schedule has been of the greatest possible value to those who are manufacturing a first class article, the sale of which has been thereby encouraged and increased.

CLASSES FOR COUNTRY SHOPKEEPERS.

And as regards the shopkeepers, it is obvious that many traders have been acting in ignorance of the character of the goods they supply. To remedy this, the Department has offered to hold classes for their special benefit. The offer has in one or two instances already been availed of, greatly to the advantage of those who attended them. From time to time, as circumstances permit, the Department is prepared to hold further short courses of a week's duration for the benefit of country shopkeepers and their assistants who desire to learn the technicalities in mixing fertilisers and feeding stuffs on the bases of their chemical composition.

TRANSIT AND MARKETING OF PRODUCE.

In connection with the transit of produce, considerable improvements are being rapidly brought about in the preparation, handling and marketing of Irish produce, especially in respect of butter and eggs. But as regards egg consignments, there is still (principally in the Western parts of Ireland) much to be done before the reasonable requirements of the British markets are satisfied. This is particularly the case in connection with the material employed in packing eggs, wet musty hay being sometimes used. The Transit Inspectors of the Department constantly visit the railway stations and places of shipment, and by these means the carrying companies—who are anxious to convey the produce properly—are apprised of irregularities. This action has led to very beneficial results, both to the consignors and the consignees. Considerable injury is caused to the Irish egg trade by the practice, which exists in various places where markets are held, of packing egg cases in the open air in wet weather. Local bodies interested in such markets would do well to provide shelter for the purpose, and thus aid in overcoming a practice which has done much to retard the Irish egg industry in its competition in the British markets with the better marketed produce of other countries.

THE WORK OF THE VETERINARY BRANCH.

I pass now to the work of the Veterinary Branch, and will only refer to two matters which call for comment, viz., the eradication of Glanders and the prevention of Sheep Scab.

GLANDERS.

As to the former, for some years the eradication of Glanders has engaged the attention of the Department, and with such success that, in the year 1906, the outbreaks were reduced to 8, and in 1907 to 7. As the origin of various outbreaks had been traced to imported horses, it became evident that, before a full measure of success could be attained, it would be necessary to control the admission of horses into this country. Accordingly in January, 1907, an Order was made prohibiting the importation into Ireland of any horse, ass, or mule from Great Britain, the Isle of Man, or the Channel Islands, except under the authority of a permit previously obtained from the Department, and subject to such conditions as might be prescribed. The object of this provision was to enable the necessary inquiry to be made in the case of each proposed importation, and to

consider in connection therewith the information at the disposal of the Department with reference to the localities in which Glanders was in existence in Great Britain. When it is thought desirable, the animals are subjected to the mallein test before importation is allowed. A further Order was made in the following December extending the same procedure to horses imported from abroad. The enforcement of these Orders has been fully justified by the result. Ireland has now been free from Glanders for about a year and a half, the last outbreak occurring in November, 1907.

SHEEP SCAB.

The success which has attended the steps taken towards the suppression of Glanders should be quite as possible of realisation with reference to Sheep Scab. A primary necessity is, of course, a willing and ready co-operation, on the part of all concerned in the prevention of the disease, to carry out strictly the requirements specified in the Department's Orders. One of the most important of these requirements is sheep dipping, and while many of the County Councils have taken active steps to secure efficient dipping, others have not yet fully realised their responsibilities in the matter. Owing to the peculiarities of the breeding, rearing and grazing of sheep, and of general sheep trading, it has been found that a single dipping period does not attain the required end; and several County Councils have exercised the powers with which they are vested by "The Sheep Scab (Local Regulation) (Ireland) Order of 1905," to make local regulations for a second or autumnal dipping period. It would be of advantage to all concerned if a larger number of County Councils would follow these examples and make similar regulations. This second dipping is of considerable value in preventing the spread of Sheep Scab in winter. The Council of Agriculture have on previous occasions expressed themselves in favour of a second compulsory dipping; and the Department feels that it will be necessary to require by special Order a second dipping in counties where no local regulations for this purpose are in force, where the disease has been continuously prevalent, and from which it has spread to adjoining counties, and even in some cases to remoter districts.

VETERINARY DISPENSARIES.

I must refer, at this point, to a veterinary matter which comes more properly within the work of the Agricultural Branch. Some time ago I mentioned that an experimental scheme of Veterinary

Dispensaries for Co. Wexford had been sanctioned. It took the County Committee some time before they got the scheme into actual operation, and as the experiment will not have run its full course until the close of the present year, the Department is not yet in a position to make a pronouncement as to the practicability of the scheme for the rest of the country. So far as the experiment has gone, however, the Wexford County Committee, to whom its initiation was due, appear to have been fully justified in making the venture. In the nine months ended 31st December last, 1,637 cases were treated, the average cost being 4s. 6d. The entire charge upon the Joint Fund amounted to £334 for salaries to veterinary surgeons, and £35 for rent of dispensaries. But apart from the general extension of the scheme, the question of the establishment of veterinary dispensaries in the Western districts is one which, I think, ought to be seriously and promptly considered. In most other parts of Ireland the people are better read, have a wider knowledge of live stock and their treatment, and have a fair opportunity of consulting a veterinary surgeon. But in the West the smaller farmers frequently have no veterinary assistance available, even if they were in a position to pay for it, and the loss in live stock which they suffer on this account is undoubtedly very heavy. The matter must, of course, be approached with caution. It is, as I have said, too much in the preliminary stage as yet to come to any definite decision upon the advisability or otherwise of practically applying the principle of the Medical Charities Act to live stock, but with the addition of new funds to the Department's resources for agricultural development work in the congested districts, this would appear to be one direction in which they might be most profitably expended.

IRISH FISHERIES.

As to the fishery work, I am sure the debate upon Irish fisheries, which took place in the House of Commons during the present Session, is still fresh in your minds. On that occasion I referred strongly to the straits in which the Department finds itself owing to the utter inadequacy of the funds at the disposal of the Fisheries Branch, and I frankly stated that in my opinion it was the duty of the Government to remove this reproach in Irish administration. The mills of the Imperial Exchequer grind very slowly, and they are in sooth grinding exceedingly slowly in this instance. But in the present time of financial strain, and when, indeed, generous provision for Irish needs is being made in other directions, I must content myself with the reflection that the existing position of affairs cannot

endure much longer, and that the necessary augmentation of funds will ere long be an accomplished fact.

STEAM TRAWLING.

The past year has been characterised by a great increase in illegal steam trawling around the Irish coast. Proceedings were instituted in thirty-six cases. The offence was, for some years, on the decline, but it has been rather brisk of late. In fact, the "Helga" has during the last twelve months, made more captures than in the previous seven years. Illegal trawling is mainly carried on by British-owned vessels, there being only two cases in which foreign vessels were found infringing the territorial limits. The peculiarity of the illegalities in the present year is that certain skippers have persisted in repetitions of the same offence, practically in the same areas. One such skipper has within a few months been fined for six offences. This state of things goes to show that the powers at the disposal of the Department for the suppression of such illegalities are insufficient, and that further legislation on the subject must be contemplated. A Bill has been introduced by the Government dealing with foreign trawlers who fish within extra-territorial areas prohibited to British trawlers by the Fishery Board for Scotland. Foreign trawlers within these areas are not amenable to the British law; but in order to hamper or stay their proceedings, the Bill proposes to prohibit the landing of their fish within the United Kingdom. The extension to Ireland of the principle of this Bill is now contemplated, because, although the practices with which it deals are few and almost unknown in the case of Ireland, the passing of the proposed legislation for Scotland may cause an increase of steam trawling by foreigners inside the areas prohibited by By-law in the neighbourhood of the Irish coast.

MOTOR FISHING BOATS.

I have informed you on a previous occasion of the experimental use of motor fishing boats around the Irish coast, and of the success which has so far attended the experiment. One of the motor fishing boats, built to the order of the Department, has had a successful herring fishing off the Donegal coast during the past year, and her success around the coast has led to demands for further vessels of this description. This demand we are meeting by the issue of loans. The type of boat and engine suitable for different localities has been engaging the attention of the Department, and further experience

may lead to the selection of several types. The matter, involving as it does a very considerable amount of labour, will continue to receive the Department's closest attention.

PIER ACCOMMODATION AT BUNCRANA.

At Lough Swilly great developments have taken place in the herring fishing. A very large share of the capture is reaped by Scotch fishermen, who pursue the herring during the whole year around the British Islands. The local fishermen, however, join in the harvest, and a large number of local hands are employed in the curing. Of course the presence of a great fleet of Scottish vessels adds immensely to the trade of the place. In this connection I may mention that arrangements have been made by the Department to combine with the local authorities in improving the pier accommodation at Buncrana.

RATHLIN AND BALLYCASTLE.

The want of accommodation for boats at Rathlin and at Ballycastle, in County Antrim, has been the subject of long correspondence with the County Council, and it is hoped that in the near future something may be done to effect the necessary marine works at both these places. The money needed to make any appreciable difference in the conditions at present existing runs, however, into figures beyond anything that the Department could undertake. But I am engaged in pressing upon the Treasury an application for special aid for these urgent and necessary works.

WHALING.

The question of the pursuit of the whaling industry in Ireland is quite a live one. In the case of the factory at Inishkea, for which the Department has granted a licence, there is no doubt that its existence is of great benefit to the islanders. The institution, under suitable conditions, and in certain cases, of this industry was the foundation of the Whaling Stations legislation which was passed last year.

TECHNICAL EDUCATION.

So far as the work of the Technical Instruction Branch is concerned, all that need be said is that the various schemes are being developed and perfected as experience dictates. A sound foundation for technical instruction is being laid in our Secondary Schools

through the operation of the Department's Programme of Experimental Science and Drawing. This programme is now being worked in no fewer than 290 Secondary Schools. The Technical Schools have, during the last two years, undergone considerable development, owing to the introduction of the revised Regulations for the payment of Science and Art Grants. The grant to these schools out of the Science and Art Vote has increased to over £17,000 per annum, being four times the amount paid prior to the introduction of the scheme. This increased payment has been the result of increased efficiency. Under the revised scheme schools are encouraged to frame courses of instruction adapted to the needs of their different localities; and the Department on the one hand, and Technical Instruction Committees on the other, are seeking to bring technical instruction into closer relation to the needs of industrial development. It is very desirable that the active interest of manufacturers and employers of labour generally should be secured in developing these local schemes, and I am glad to be able to state that a movement is taking place in this direction.

COMMERCIAL EDUCATION.

One of the more interesting developments on the Technical side is in regard to commercial education, which, it must be admitted, is scarcely of less importance than industrial education. The Department recognising this, established a scheme of Scholarships for the purpose of training young Irishmen for the work of teaching, and already twelve have completed their course of training, most of them being now at work at various centres. The School of Commerce, at Rathmines, was the first school of its kind to be started in this country. Aided by a special grant, Waterford subsequently established a commercial section, and last year I opened a new Commercial School in the city of Cork, under the City Technical Committee, which is already a marked success. This latter development was made possible by a special grant from the Department, in consideration of generous voluntary aid from the Cork Chamber of Shipping and Commerce. The excellent example shown by Cork has now been followed by Limerick, where similar voluntary effort is manifesting itself, notably in connection with the Chamber of Commerce; and we have at present under consideration the immediate establishment of a School of Commerce in Limerick. It is to be hoped that these examples of local voluntary effort will provoke emulation on the part of other localities.

PATENTS AND DESIGNS ACT OF 1907.

In my last address to you I referred to the Patents and Designs Act of 1907, and to the fact that the Department had appointed a small Commission to visit Germany in connection with its operations. The report of this Commission has been printed, and is in the hands of members of the Council. It contains much information that will be useful to those engaged in the development of Irish industries. If the Act is to benefit Ireland, it can only be through local enterprise. If foreign manufacturers are to be induced to bring their business experience and capital into this country, it will be necessary to appeal to their self-interest. Hence it will be essential for those interested in the industrial development of any city or locality to themselves make special and persistent attempts to disseminate information in the proper quarters as to the facilities and advantages which the localities in question have to offer. Then there is a further consideration of great importance. Where foreign manufacturers should decide not to transfer any portion of their business to the United Kingdom, but should take the alternative of suffering the revocation of their patents, or refrain from seeking the protection of the Patent law here, the invention becomes public property, and our manufacturers may avail themselves of such advantages as the use of it may confer. This fact places a still wider responsibility on those engaged in the important work of technical education, especially in its direct application to industries. It is not sufficient that they should be acquainted with what is being done in these islands. They should also keep abreast of industrial conditions abroad, and particularly of the progress of invention in industries either practised in or suitable to Ireland.

THE GENERAL OUTLOOK AND FUTURE DEVELOPMENTS.

In conclusion, I hope the Council will permit me to say that, as regards the general work of the Department, there never was a time when things were so hopeful, when the look-out was so assured. Nine years of hard and difficult work, in which prejudices of every kind have had to be overcome, have resulted in a great system of agriculture and technical instruction being firmly established. A work of this kind was bound to take time, was bound to bring with it many disappointments, and from one cause and another the work has been beset with difficulties, some of which, perhaps, might have been avoided. But now, at all events, it is in full operation over the whole country. The results are already

quite apparent. Improvement in agriculture is no longer a mere phrase. It is an actual fact. In England and Scotland the competition of Ireland has now to be reckoned with. In Great Britain work on the same lines are being pressed forward, and State aid is being demanded for it. And, finally, it is not less a matter for congratulation that the Chancellor of the Exchequer in his Budget speech the other night announced the impending formulation of a great Development scheme, not for Great Britain alone, but for Ireland as well, for which public money would be set aside for the improvements of agriculture, technical education, afforestation, and other purposes. The sum allocated in the Budget for the Development Scheme—£200,000—is extremely limited; but this is only a beginning. There is, therefore, a brighter future before agriculture; and as our sphere of activity has been circumscribed only by our means, it is safe to say that this difficulty will to a large extent be speedily removed, and that the work of the Department will pass into an even larger and more remunerative sphere. In this connection my last word would be, that there is one branch of the work which has fixed itself deeply in my own mind, and to which it will be possible under the new circumstances I have described to devote the necessary attention. I mean the giving of assistance in the shape of education to those small farmers who have come into possession of lands through the Estates Commissioners; to evicted tenants who have been restored to their holdings; and to labourers who have been endowed with half-acre and acre plots. In all these cases the work of the State has been but half done by placing these people of the soil. They are poor, ignorant, and utterly devoid of technical knowledge; and I hope the Department will shortly be in a position to step in, as they are now doing tentatively in certain parts of the country, and enable this rather forlorn class to cultivate the land with profit to themselves and to the well-being of Ireland.

STORE CATTLE, OR BUTTER, BACON AND EGGS?

(A Paper read by Mr. J. R. Campbell, Assistant Secretary in respect of Agriculture, at the Fifteenth Meeting of the Council of Agriculture, 12th May, 1909.)

The Council of Agriculture has on more than one occasion discussed the question of the relative merits of grazing and tillage. In the course of these discussions it has been shown, with some degree of certainty, that while it may not pay the large farmer to grow grain and green crops extensively, it should in ordinary circumstances pay all farmers, large or small, to plough more than they generally do at present.

Few will now be found to doubt the statements that land well tilled yields more than land under pasture; that **Advantages of** tillage therefore increases the national wealth; that **Tillage** the owners of many small farms, by breaking up a **Admitted.** portion of them, could provide remunerative work for themselves and their families; that for the want of more tillage the advantages of winter dairying and the improvement which has been effected in the fattening quality of our cattle are in great measure lost to this country; and, finally, that large sums of money have to be spent annually on foreign food-stuffs for man and beast which might be saved if tillage were more general.

But there is another aspect of the case which has not yet been discussed by the Council, and one, too, as important as that of tillage itself. This has reference to the best method for the Irish farmer to dispose of his crops, be they grain, grass, or roots. **Disposal of** **Tillage and** **Grass Crops.**

For good samples of grain and potatoes there is always a direct, if not a highly satisfactory, market. For inferior grain and potatoes, for grass, hay, straw, and roots, there is a very limited market, and these articles must, therefore, be converted into products for which there is a demand in our own markets or in those of Great Britain.

Farming for the production and sale of crops is comparatively easy. These, so to speak, are raw material. The real test of the farmer's knowledge, experience, and business capacity lies in his ability to

convert his crops profitably into commodities fit for human consumption.

What are these commodities? The important ones group themselves naturally under two heads, viz.:—(1) Store and fat cattle, and (2) butter, bacon, and eggs. For convenience, these two may be referred to as the trade in stores and the trade in breakfast table commodities. Grouped in this manner these two form the principal items of our export, each bringing the same income of about ten millions sterling. Seeing, therefore, that they are both of great and of equal importance, the questions at once arise: which of the two is the better suited to the conditions of this country, and which has the better prospect in the British markets?

In suggesting answers to these questions it must not be assumed

Need for Discussion.

that the views expressed here are those held by the Department or by any of its officers. They are put forward merely as a basis of discussion, and to draw attention to the importance of these questions at a time when occupiers are entering upon a fresh and final agreement as to what they are to pay for the use and ownership of the land, and at a time, too, when out of the grass lands new farms are being created for new farmers. In their altered position farmers are likely to find themselves between the nether and the upper millstones. The annuity, like the nether stone, is fixed, but will grind none the less surely if the upper, in the form of foreign competition, presses heavily. The country should, therefore, go in for, and the Department should encourage, that system of agriculture best suited to the condition of the country, and which has the least to fear from foreign competition. The Council of Agriculture is the proper body to initiate a discussion on this subject. But they cannot settle the question at a sitting. It is hoped, however, that having been raised here the matter may be taken up and discussed throughout the country by Committees of Agriculture, by Agricultural Societies, by the Press, and by all interested in agricultural development.

In attacking the problem we are met at the very outset with two great difficulties. The first is that so few farmers are in the habit of calculating the cost of producing their crops, and fewer still that of rearing calves, of grazing stores, of feeding milch cows, of raising pigs, or of keeping poultry. It does not meet the case to make calculations for them, although

Cost of Production on the Farm.

that can be done, and indeed estimated cost of production have appeared from time to time in the Department's publications. To convince the farmer of the soundness or unsoundness of his position he must be induced to make estimates of costs for himself, using his own everyday practice as the basis of his calculation.

It is indeed most necessary that men should learn to sit down and count up the cost of the articles they produce, and to see which is paying them best or whether they are getting any return for the time, money, and labour they expend on each branch of their work. To encourage inquiry into actual costs of production under local practice, the Department propose during the coming winter to ask the Agricultural Instructors to deal specially with the question at the evening meetings of farmers held throughout each county. They also propose to lay increased stress on calculations of this kind in the winter agricultural classes. The Department will welcome from all who have studied the subject seriously a statement of actual cost of production on their farms. We cannot undertake to do more than acknowledge the receipt of such communications, but the senders may rest assured that such figures will be prized, and in due course collated with others of a like nature to form on some future occasion the basis of an article for the Department's *Journal*, or for public lectures and discussions on the subject.

The second difficulty is the want of definite information as to the rate of progress made by foreign countries whose resources are only partially developed or altogether unknown. We know very well what to expect from Denmark and from the United States of America, but how long is the present extraordinary high rate of increase in exports of meat from the Argentine to continue? What is the extent of the undeveloped resources of that country? Is she likely to change the nature of her exports? How long will it be before her beef is equal to our own in quality and price? What exactly have we to expect from Siberia or from any other undeveloped country? So much depends on the answer to these questions that it would be no extravagance if a roving commission were maintained to inquire into these and similar questions relating to foreign countries that compete with us in the British markets.

We have statistics, it is true, showing what these countries export to the United Kingdom. But these, excellent so far as they

Future of Foreign Competi- tion.

go, are imperfect guides to the future and to the systems of agriculture which our farmers may find it necessary to adopt.

In the absence of fuller information we must make the most of what we have, and it may prove sufficient to enable us to indicate at least the general policy we should pursue in the immediate future.

First, then, as to the cattle trade of this country. Engaged in it are those who rear the calves and those who afterwards graze them. The grazing of stores, it must be admitted, is a very popular form of farming. It can be carried on with the minimum amount of employment of the agricultural labourer and of the artisan, the minimum amount of trouble, the minimum risk of loss through death and disease, and the maximum amount of excitement in the form of buying, selling, and speculative investment. But for these very reasons the cattle trade as at present conducted cannot be regarded as a sound one for the conditions of this country.

There are also other considerations which tell against it. A large proportion of the trade is in young, growing animals, and, as is well known and easily explained, the grazing of such cattle greatly deteriorates the fertility of the land as compared with some other forms of farming. The trade, too, depends solely for its success upon the conditions of farming in Great Britain. It is, perhaps, not fully realised how dependent the Irish store stock trade is upon the system of farming carried out in Great Britain—a system in which there might come a change at any time that would ruin our store trade.

Again, the total weight of stores annually exported cannot be much under four million cwts., and if we place the price of the fattened animal at 5s. per cwt. higher than that paid for the stores, the British farmer must pocket annually not far short of one million sterling by developing latent qualities in our cattle which we do not now realise at home.

Now, what of the small farmer who breeds and rears the calf?

What does he make out of the store trade? Let anyone take the value of a calf at birth, add to it the value of the new milk, the separated milk, and the meal or cake which it consumes, add to this again the cost of grazing, of winter feeding, and of labour, and to this amount place the value of the animals that die, and it will often be found that the total exceeds, perhaps to a

For and Against the Store Trade.

Does Calf- Rearing Pay?

considerable extent, the value of the animal when sold at twelve or fifteen months. Early winter calves, calves of good quality, and extra thrifty calves, leave a fair return, but what of the others—the produce of inferior bulls and cows, the unthrifty, and the numerous calves dropped in the spring. These may leave a return, but it is a miserable one compared with the value of the food and labour bestowed upon them. In considering the question it is no argument to give instances of special lots of calves that have done well. We must consider all the calves reared and sold as stores; calves cheap and dear, big and small, healthy and diseased, the bad doers as well as the thrifty, the produce of the scrub bull as well as that of the Shorthorn, Aberdeen Angus, or Hereford premium bull.

So much for the person who takes the trouble and risks the loss of rearing calves. What of the person who grazes the calf afterwards? Does he make a profit? If he buys a store beast now and sells it next October, would the return, one year with another, equal what could be got from a system of mixed farming? On the exact return from grazing we have no time now to dwell. It is perhaps far from being so profitable as it is often regarded, and there probably would be fewer attracted to it but for the fact that the business is somewhat of the nature of a gamble.

The cattle trade would bear a very different aspect if the person who bred and reared the calf also grazed and finished it for the butcher. We would then be independent of the vicissitudes of British agriculture. We would then reap the advantages of the increased fattening propensities which the live stock schemes have conferred on our stores, of which a large share of the value now goes into the pockets of the British feeder.

But into what commodities are we to convert our grass if we do not graze stores, and what will we do with our milk if we do not rear calves? These are not very formidable questions. They have been answered by the Danes and by farmers elsewhere. Feed your grass to milch cows and your separated milk to pigs is their reply and their practice. In Denmark, and indeed in most European countries where dairying is practised, you will see no “stores” and no calves, except such heifers as are needed to keep up the stock of cows. The others are converted into veal as speedily as possible, a practice which allows of a much larger

**Grazing not
always Profit-
able.**

**Substitute for
Store-Raising.**

stock of milch cows being kept. Here, again, we invite those engaged in grazing stores and those engaged in the dairying industry to favour us with the results of their calculations showing the relative returns from the two systems.

It is generally admitted that milch cows, pigs, and poultry are admirably suited to a country of small farms and mixed farming. Moreover, the production of the breakfast table commodities is well suited to the financial condition of our farmers, for they have not so long to wait for the price of butter, eggs, or pigs, as for the price of stores. The very perishable nature of butter and eggs gives our farmers an advantage, for we are the nearest of all competitors to the best markets in the world, and from no class of stock can the farmer get so quick and certain a return for extra food and extra care as from cows, pigs, and poultry.

An alternative to converting farm crops into butter, bacon, and eggs is to fatten some of the stores we now export. But stall-feeding is not so well understood in this country, and the returns from it not very certain. To start fattening stores one must see that there is sufficient food to finish them, and this is not always the case on a small farm. On the other hand, we know that the country can produce breakfast table commodities of the highest quality, and the industry is well understood and already practised.

To help in throwing light on the subject, the Department are now carrying out some experiments in winter dairying,* calf rearing,† and cognate subjects at a number of centres, and in other ways attempts are being made to collect data of the kind required.

Experimental Tests.

On the value of feeding separated milk to pigs some figures are already available. The attention of all interested in the subject is directed to a series of valuable experiments which Mr. Duncan has been carrying on for the past two years at the Clonakilty Agricultural Station, and the results of which have appeared in the Department's *Journal*.‡ The experiments extended over two years, and were repeated three times on three lots of pigs. Separated milk and potatoes were fed to one lot; separated milk, potatoes, and meal, to another; while the third received meal and potatoes, but no milk. Two questions were submitted by the Department to Mr. Duncan:—(1) What is the value of separated milk when fed to pigs? and (2) to what price must pork fall to yield less than one penny per gallon? Mr. Duncan's answer to the first

* See page 682.

† See page 695.

‡ See *Journal*, Vol. IX., No. 3, p. 458. April, 1909.

question is that when pork was selling at 48s. 3d. per cwt., separated milk, fed as above, yielded twopence per gallon, and in answer to the second question he says that so long as pork was selling at 40s. 4d. per cwt. the separated milk returned one penny. The experiment further showed that pigs cannot be reared profitably without milk. Mr. Duncan is now engaged in estimating by direct experiment the value of separated milk when fed to calves. Fed to winter-dropped well-bred calves, it may yield as much as when fed to pigs, but whether it yields as much when fed to the ordinary spring calf is extremely doubtful.

But there is still another important aspect from which this question should be viewed. What are the prospects of our two commodities in the markets of Great Britain? How are they likely to be affected by foreign competition?

With an increasing population and an increasing improvement in the standard of living the demand for both our chief exports goes on increasing. How great that demand is may be seen from the following figures:—In 1908 the value of the beef (alive and dead) imported into the United Kingdom was about eighteen million sterling, while the value of butter, bacon, and eggs amounted to fifty million sterling. There is, therefore, plenty of room for our products if they are of the first quality.

But the value of the imports has a very important bearing on the question before us. Taking the twenty years from 1888 to 1908, we find that during this period the price of beef has fallen twenty per cent., the prices of butter, bacon, and eggs have not only maintained their position, but have actually risen.

One more point. The statistics of Irish exports are beginning to furnish information of great interest. Our trade in exports is increasing, but there is some indication that the increase is steadier in butter, bacon, and eggs than in cattle, notwithstanding the much larger sums of money spent upon the improvement of store stock compared with that spent on milch cows, pigs, and poultry. If the latter respond so freely to the efforts that have been made for their improvement, would it not be well to consider whether still more money might advantageously be spent on them, even should it be taken from the funds now given to the store stock trade?

PROTECTION OF WOODLANDS IN IRELAND.*

IV.—*Protection against Injurious Insects.*

Although a large number of insects injure forest trees in Ireland to a greater or less extent, yet the woodlands of the country generally do not suffer so seriously from insect pests as do parts of England and Scotland. Moreover, several species of noxious insects which cause enormous damage to Continental forests in certain seasons do not occur here at all. Probably the cool, moist character of the average summer in Ireland is not so conducive to the rapid increase of many types of insects as the hotter and drier climates of other countries, while the scattered and broken nature of the woods prevents the rapid spread of insect pests over wide areas. Whatever the cause, insect attacks, with one or two exceptions, cause the Irish forester less anxiety than many other forms of injury to which woods are liable, and it is not necessary to do more in this article than to briefly refer to those most commonly met with, and to deal more thoroughly with some half-dozen or so which occasionally do serious damage.

Apart from the occurrence of injurious insects, however, and the numbers in which they exist, it must be remembered that very little can be done by the practical forester to combat insect attacks. The comparatively large area over which woods and plantations extend, and the height to which individual trees attain, render the really effective measures of prevention not only difficult to carry out, but extremely expensive if attempted on an adequate scale. Many measures, therefore, which are recommended in text-books on economic entomology cannot be practised by the forester for reasons of finance alone, and it is often sounder economy to leave the remedy to natural developments than to attempt the application of those measures which involve great trouble and expense without any corresponding results. It is merely intended here, therefore, to describe such practical protective measures as are often necessary to prevent

* The previous sections of this article appeared in the following issues of the *Journal*:—

- I. "Protection of Woodlands." July, 1908. Vol. VIII., No. 4, page 627.
- II. "Protection against Fire and Unfavourable Climatic Conditions." January, 1909. Vol. IX., No. 2, page 246.
- III. "Protection against Domestic Animals, Rabbits, Squirrels, etc." April, 1909. Vol. IX., No. 3, page 477.

The following section will be published in a subsequent issue:—

- V. "Fungoid Diseases of Trees (*Larch Canker, Ash and Beech Canker, Root Rot and Honey Fungus, etc.*)."



Fig. 1.

Caterpillars and Cocoons of Pine Saw-fly (*Lophyrus pini*). One-half natural size.



Fig. 2.

Larch Aphis (*Chermes laricis*) on larch twigs in June.

fatal injuries to forest trees, or to prevent such attacks as interfere with their proper development as timber producers, and which can be carried out by the ordinary workman in a simple and inexpensive manner. The descriptions of the damages inflicted are confined to characteristics which are necessary for their identification when associated with the host plants, or victims of attack.

In a general way, insects injurious to forest trees may be divided into five classes, as follows:—1st. Those which injure or destroy the leaves or needles; 2nd. Those injuring the bark (*epidermis*, *bast*, etc.) of stem and branches; 3rd. Insects attacking the roots; 4th. Those destroying fruits and seeds; and 5th. Wood and shoot borers.

The most serious forest pests attacking leaves are the caterpillars of various moths and saw-flies. In many cases the extent of the damage done depends greatly upon the weather at the time of attack, but the most important factor is generally the occurrence of a season in which a particular pest appears in excep-

tionally large numbers, and these seasons appear to recur at more or less regular intervals. When such a season coincides with climatic conditions unfavourable to the host plant, as, for instance, cold, dry springs or drougthy summers, the effects of the attack are aggravated and much damage may be done. Good growing weather, on the other hand, invariably minimises the attack by relatively reducing the injury done, and favouring recovery.

Amongst broad-leaved trees the following insects are often the cause of serious damage: the Oak leaf Roller, Mottled Umber, and Winter moths on oak, and the Willow Beetle in osier beds. Against the former nothing can be done, but the damage done by the Willow Beetle may be minimised by spraying with insecticides and shaking the beetles from the rods on to tarred cloths or boards. Both methods are troublesome and costly, but where the beetle is causing extensive injury to valuable osier beds systematic spraying for two or three seasons would probably reduce the stock of beetles to an appreciable extent by destroying the larvæ.

Insects destroying the needles of conifers are principally represented by the Pine Saw-fly (Fig. 1), the caterpillars of which sometimes do great damage to young pine plantations. Two generations of caterpillars are produced in a season, the eggs being laid in slits in the needles, and the resulting larvæ feeding together in companies of twenty or thirty. This habit enables them to be easily dealt with on young trees, the branches of which can

be reached from the ground, by brushing them off into tin cans or squeezing them to death between the hands protected by gloves. These caterpillars may be looked for between May and October, but they seldom do extensive damage over a wide area in Ireland.

An insect doing much damage to larch needles is the Larch Chermes (Fig. 2), which infests the shoots of sickly or badly-thriving trees to an extraordinary degree in many seasons, and especially during dry weather. These insects suck the sap from the needles to a certain extent, but the greatest damage is done by the woolly matter and sticky secretions which are exuded from their bodies, and which cover the needles with an injurious coating which prevents them from performing their assimilative functions. On nursery plants or very young trees, spraying with paraffin emulsion can be tried, but little can be done in older plantations. As a rule, the repeated attacks of this insect indicate unsuitable soils and situations, but in dry seasons few plantations are free from its injuries.

Another, but less injurious insect to larch, is the Larch Mining moth, the small caterpillars of which burrow into the needle, and destroy the upper portion of it. Trees badly attacked have the appearance of being frosted, but the insect is seldom plentiful enough to do serious damage to healthy trees.

In Cumberland, a serious enemy of the larch has appeared in recent years in the Larch Saw-fly (*Nematus Erichsonii*). This insect has done great damage to larch plantations in the Lake District. Last season a species of *Nematus* (*N. maculigar*)* was found on Japanese larch at Clontarf, Co. Dublin, previous records having described it as feeding on willows.

The most distinctive bark-attacking insect is a conifer pest, the Pine Weevil (Fig. 3). This weevil is distributed



Fig. 3.
Pine Weevil.
(*Hybobius abietis*.)
Nat. size.

**Insects
attacking
the Bark.**

generally throughout Ireland, and is chiefly troublesome in plantations during the first two or three years after planting freshly cleared ground. The weevils breed in the roots and stumps of felled

* Carpenter. Economic Proceedings, Royal Dublin Society, Vol. I., Part 15.

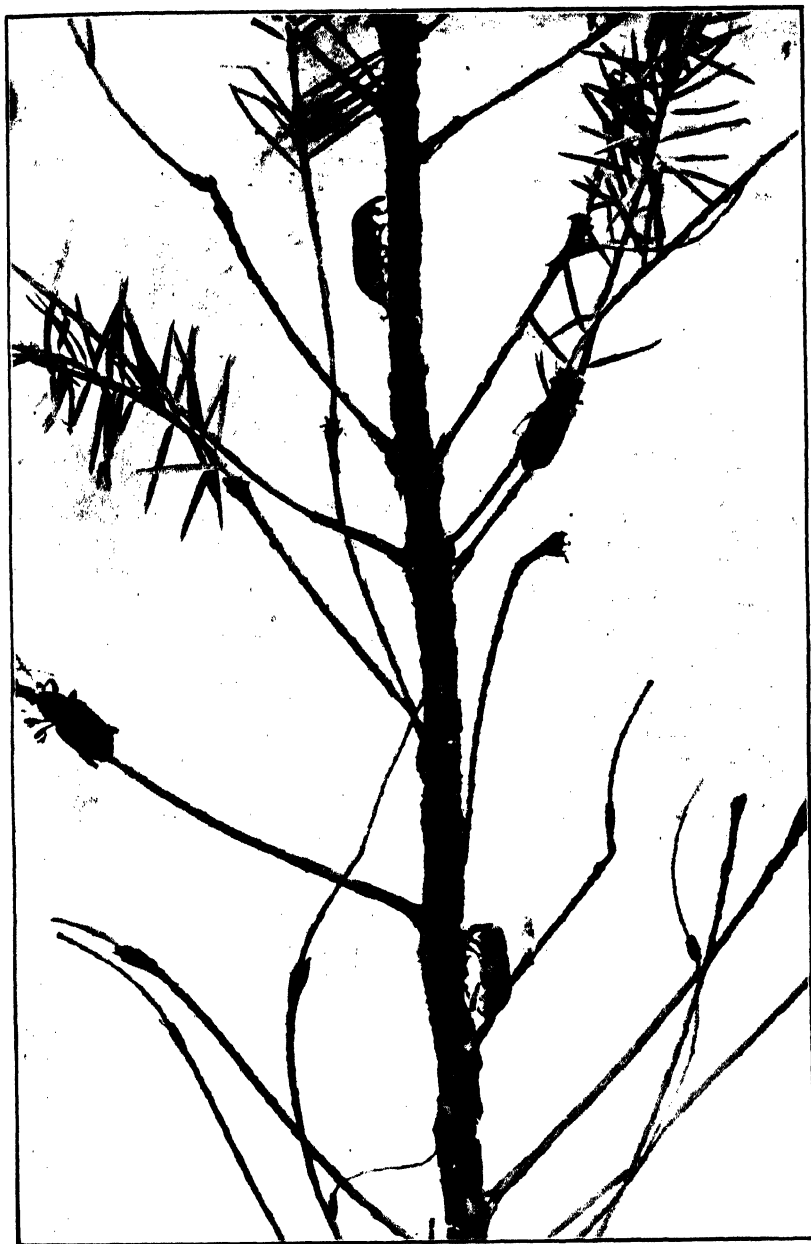


Fig. 4.

Pine Weevils (*Hylobius abietis*) on Douglas fir transplant. Natural size.

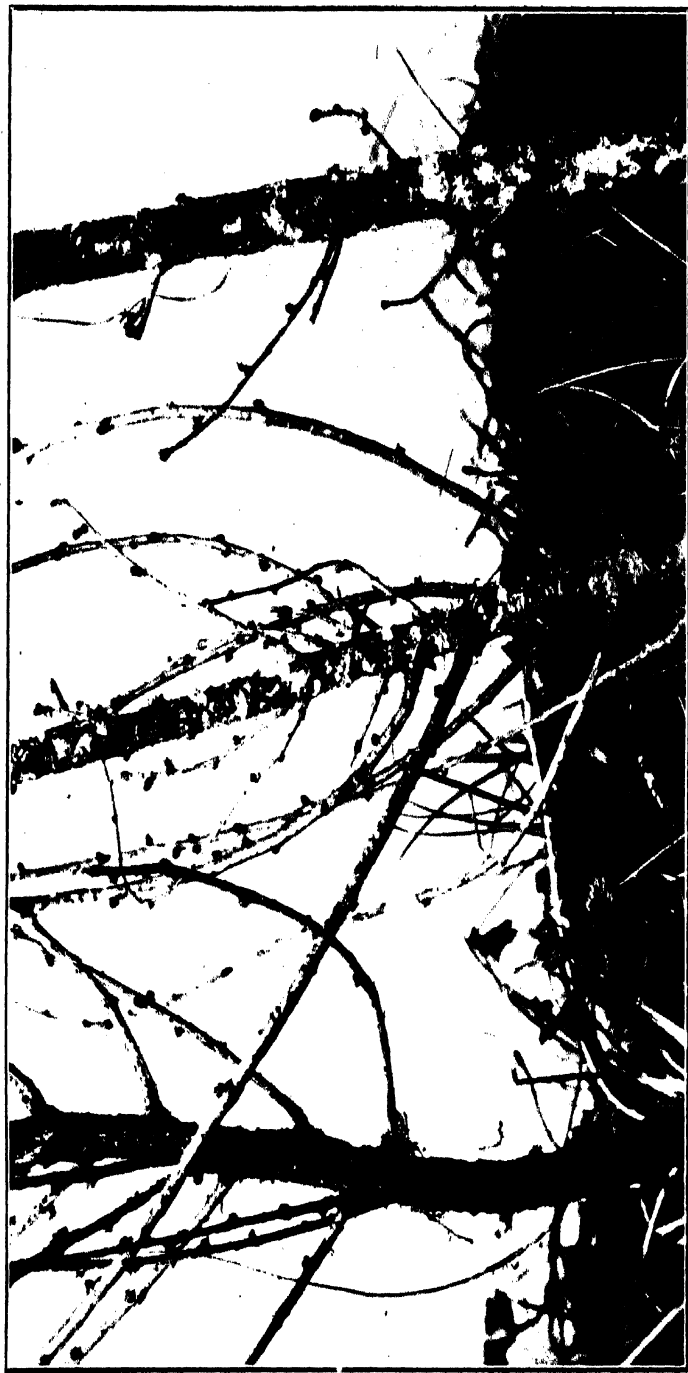


Fig. 5.

Larch Stems damaged by Pine Weevils.

coniferous trees, and also in logs lying in contact with the ground. The eggs are laid on the surface of the bark, and the larvæ eat their way down to the wood beneath, feeding there for periods varying from twelve to eighteen months, according to the time of the year at which the parent beetles appear, or the eggs are laid.

The damage done by the weevils takes place throughout the summer months, and consists in the partial or entire destruction of the bark and needles of young conifers (Figs. 4 and 5), or, if these are absent, of branches of older trees. These injuries are most apparent on recently planted ground from which a crop of conifers has been cleared from one to two years previously. Under such circumstances, favourable conditions for breeding first attract the weevils as soon as the trees are cut, and large numbers of eggs are laid on the surface of the roots. The mature weevils resulting from these eggs appear mostly in about two years, by which time the ground is usually re-planted. The size of the young trees, and the more or less weakened condition in which transplanting has left them, are all that could be desired by the weevils, and large numbers of plants are invariably damaged to a fatal extent, while others are weakened and injured.

Various remedies have been tried for combating the attacks of this pest, but the final methods generally resolve themselves into hand-picking the weevils from the plants, or from places in which they have concealed themselves during the day. To facilitate this work, traps may be laid down at intervals on the surface of the ground, consisting of two pieces of bark taken from freshly felled trees and placed one above the other, as in Fig. 6, or of bundles of twigs of pine



Fig. 6.

Bark Trap for Catching Pine Weevils.

or larch laid about in the same manner. These traps, together with the plants themselves, should be examined daily by boys or girls, the weevils collected in tins, and destroyed. A dozen school children, going through the plantation every evening, and gathering the insects at so much a hundred, will soon decrease the number of

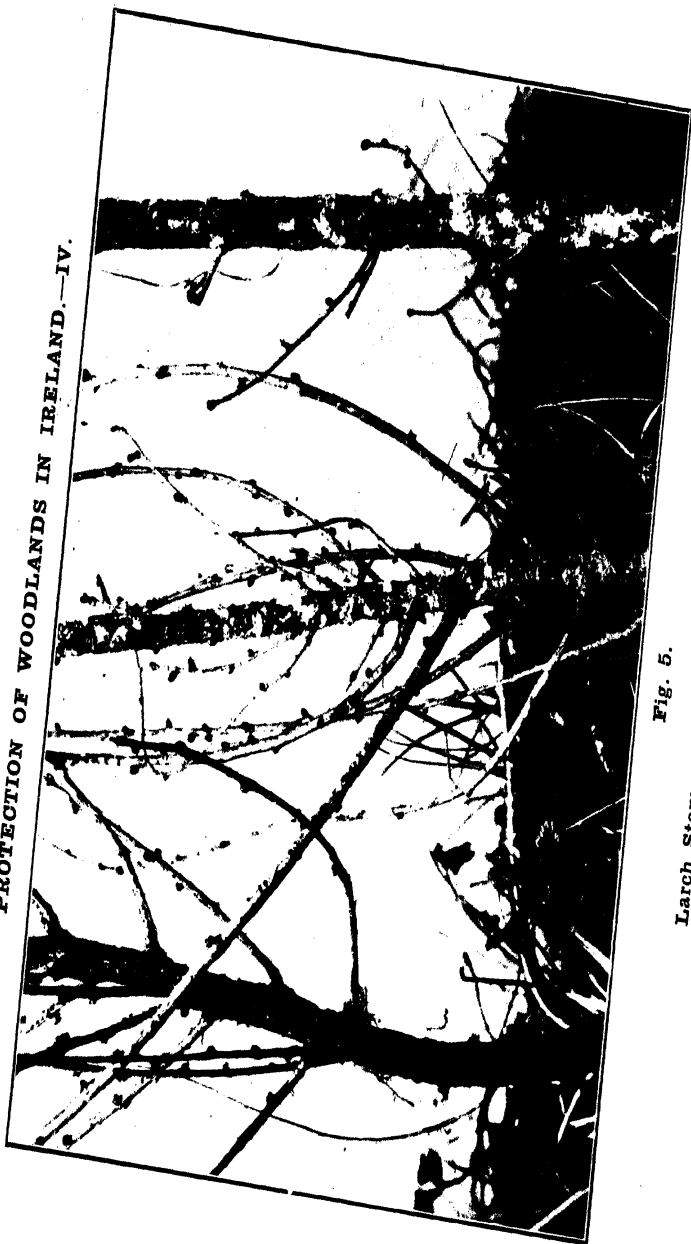


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weevils, but the collection should begin early in the year, and before serious damage has been done.

After the trees have become fully established the attacks of the weevil are less injurious, and, wherever their presence may be anticipated, careful pit-planting should always be adopted, and the work carried out in autumn, if possible. Under such conditions, the chances of the plant making a fair start the following spring are greater, and if re-planting immediately follows the felling and clearing off of the old crop, a year's growth may be gained before the main batch of weevils appears. The practice is sometimes adopted of leaving the ground unplanted for two or three years after felling. This gives time for the disappearance of most of the weevils, but the ground itself often becomes covered with a dense growth of weeds and rubbish which increases the difficulties of replanting.

Various bark-beetles, which breed in the bark of sickly, dying, or recently felled trees, seldom do much harm to healthy plants, except the Pine Beetle dealt with below.

The Beech Felted Scale (*Cryptococcus fagi*) (Fig. 7) has been on the increase in recent years in Great Britain, and is generally distributed throughout Ireland. The chief damage done is in cases where the woolly matter secreted by the insect accumulates on the bark in sufficient quantities to block up the lenticels or pores, the bark eventually dying and falling off. The causes which are responsible for the attack and increase of the insects on beech trees are not known, as neither the age nor health of the trees appear to be determining factors. The insects may be seen, as shown in the illustration, on the trees for many years without apparently increasing or decreasing in numbers, nor, so far as can be seen, doing any harm. In other instances the stems and branches will be found covered for the most part with a thick layer of snowy-white wool, beneath which the small yellow insects may be found. As the attack is usually confined to individual trees, and spreads very gradually, the remedy is a very simple one, and is usually efficacious. When the attack is still in the stage figured, spraying or syringing the stems with paraffin emulsion (soft soap and paraffin) will do all that is required. When, however, the woolly accumulation is present, the bark must be scrubbed with a hard, stiff brush, and the mixture rubbed well into the cracks and crevices. A long-handled brush, such as is usually employed in gas-tarring boards, is the most serviceable for parts of the tree which cannot be reached from a ladder.



Fig. 7.

Early stages of Beech Felted Scale (*Cryptococcus fagi*).

PROTECTION OF WOODLANDS IN IRELAND.—IV.



Fig. 9.

**Mother and larval galleries of Pine Beetle (*Hylesinus pinniperda*)
in Scots pine bark,**

Insects
Attacking the
Roots.

Few insects do serious damage to the roots of thoroughly established trees, but in nurseries and sometimes in young plantations, Cockchafer grubs give a good deal of trouble. The chafer itself (Fig. 8) is never seen in large numbers in Ireland, and it is seldom that its grubs do such serious damage as is

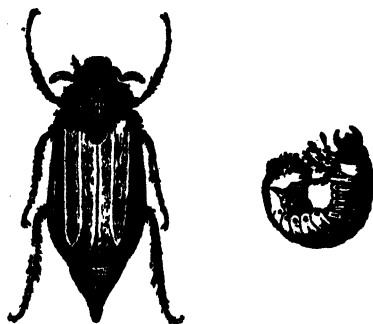


Fig. 8.
Beetle and Immature Grub, Cockchafer.
(*Melolontha vulgaris*.)
Nat. size.

common in the South of England and on the Continent. But where it occurs it is a very difficult pest to deal with, and precautions are usually more efficacious than remedies.

As indicated by the name occasionally given them, a May Bug, the beetles appear in May, and feed on the leaves of oak, beech and other trees. The eggs are laid in small groups on or near the surface of bare or cultivated ground, and the larvæ from these eggs are the chief trouble.

The damage is usually confined to trees under four or five years of age, and consists in the bark or cortex of the roots being eaten off beneath the surface of the ground. This being done during the summer, the first indication of the presence of the grubs is seen in the withering of the plants, and, upon the soil being turned up, the white, fleshy grubs are usually found. These grubs live in the ground for two years before pupating, and during that period they feed on the roots of various plants during the summer months.

Few remedies against this pest are possible, as anything likely to injure the grubs is equally likely to injure the plants. Where they have once appeared, the best precaution is that of carefully watching the ground when being dug over in winter, and, if any grubs are noticed, the planting of young trees in it should be avoided, unless methods of destroying the grubs are adopted. These latter may take

the form of ridging the ground, or throwing it up into high banks, with deep furrows between, and placing a layer of quick lime at intervals of one foot or so on the surface as the ridge is raised. Any grubs in the soil will, sooner or later, work their way out of the ridge, or come in contact with the lime and be destroyed. This work should be done in autumn or early winter, and, as the ground is levelled before being planted, the absence or presence of grubs can be easily noted.

A practical remedy in cases where infested soil has been planted may be found in digging small narrow trenches between the rows of trees at intervals, and placing occasional heaps of moss in the bottom of the trenches. The grubs work their way into these trenches from time to time, and can be collected from beneath the moss and destroyed.

The economic importance of forest tree seeds in Ireland at the present time is not very great, but under certain conditions may increase. Beech and ash seed are frequently slightly damaged, the former by a weevil (*Orchestes fagi*), the latter by the maggot of a fly which is not referred to in works on forest entomology.

**Insects
Destroying
Fruits and
Seeds.**

Seeds of conifers (silver fir, Douglas fir, larch, etc.) are often destroyed by the larvæ of a species of *Megastigmus*,* and a sample of silver fir seed gathered in Co. Wicklow last year was found to contain large numbers of the maggots. Remedial or preventive measures against these insects are impossible, however, and they are in any case comparatively unimportant to the average owner of woods.

The various boring insects are naturally most likely to permanently damage both trees and timber to a serious extent. The most important, from an economic point of view, is probably the Pine Beetle. This insect almost entirely confines its attacks for both breeding and feeding purposes to

**Shoot and
Wood-boring
Insects.**

species of the genus *Pinus*, and, as might be expected, is most frequently met with in the Scots pine. Its life history is as follows:—The mature beetles hibernate in the thick bark of old trees, or in shoots lying on the ground, and these pair in the months of March and April. The pairing beetles congregate on the stems of recently felled trees, or on standing trees in a dying or sickly condition, and there bore galleries into the bast or inner bark, until they reach the surface of the wood (Fig. 9). These galleries are from three to six

* Probably *M. strobilobius*.

PROTECTION OF WOODLANDS IN IRELAND.—IV.



Fig. 10.

Shoots of Scots Pine bored by Pine Beetle.

PROTECTION OF WOODLANDS IN IRELAND.—IV.



Fig. 11.

Tops of Scots Pine repeatedly damaged by Pine Beetles.

inches in length, and, on either side along their entire length, eggs to from 60-120 in number are laid. The larvæ hatch out in a few days, feed on the bast in lines more or less parallel to each other, and at right angles to the mother gallery, and are ready to pupate in about eight weeks, and emerge as beetles a few days later. The latter, forming the first generation, usually pair in the same or surrounding trees in a similar condition, and a second generation is produced, the members of which do the greatest damage to healthy standing timber. This damage consists in boring into the shoots of the current or preceding year, and destroying the pith throughout the whole length of the shoot above the place of entrance (Fig. 10). These shoots remain on the trees until strong winds or gales break them off at the base of the injured portion, and after a storm the ground beneath the trees will be found strewn with shoots, most of which will contain beetles about to hibernate. Where the beetles are numerous, the attack invariably extends to a large proportion of the season's growth, and frequently involves the leading shoot. Trees attacked in this way for one or two seasons only may recover without much permanent injury being done, but in cases where the attack is more or less of an annual nature, as in the neighbourhood of saw-mills in which pine timber is being cut, or where annual fellings are being made, many trees take on the bushy round-headed form, shown in Fig. 11, and their development into good timber trees becomes impossible.

Preventive measures consist in the systematic removal of breeding material in the shape of sickly pine trees, and their subsequent barking or conversion into scantling before the larvæ bred in them have had time to develop into beetles. Where felled timber is left lying in the woods later than the end of May, it should be barked sufficiently to allow the bast layer to dry up, and the larvæ within it to perish. These measures are especially desirable in the vicinity of young plantations, in which the loss of the leading shoots is a more serious matter than in older woods. Desirable and necessary as these measures are, however, it need scarcely be stated that they are never carried out in this country, and probably seldom, if ever, anywhere in the British Isles. Yet the removal or barking of dying trees would not involve much trouble in woods of moderate size, while the utilisation of the timber would recompense any direct outlay required. The barking of felled timber, on the other hand, would require extra expenditure in most cases, and when timber has been sold standing to the merchant, considerable trouble would be experienced in either com-

selling or persuading him to adopt measures from which he would derive no personal benefit. The most feasible plan to adopt in all cases in which pine timber is felled, either by the owner of the woods or the timber merchant, is that of cutting and removing the timber from the woods or their vicinity between the months of August and the May following. After the former month no danger exists of beetles producing a fresh generation in the felled timber, while the larvæ produced from eggs laid in March or April of the following year are usually removed with the timber to a safe distance.

The caterpillar of a moth, named *Prays curtisellus*, is often destructive to ash shoots by boring into them in much the same way as the Pine Beetle. Practical preventive measures are, however, not possible on a large scale, and collecting the infested shoots and destroying the caterpillars would merely lessen the damage done the following year to an inappreciable degree.

Several species of gall-midge have given a certain amount of trouble in osier beds by preventing the normal development of the shoot and causing it to form a rosette which effectually checks further growth for the season. The most injurious species in this respect is said to be *Cecidomyia heterobia*, chiefly attacking species of *Salix triandra*. At Castlecomer, in Co. Kilkenny, the collection of the galls during the summer is said to have produced good results in following seasons, but planting in good, rich soil is probably a fairly good preventive measure.

Damage to felled trees and round timber of conifers is chiefly confined to the Giant Sirex, or wood wasp (Fig. 12). Larch, spruce, and

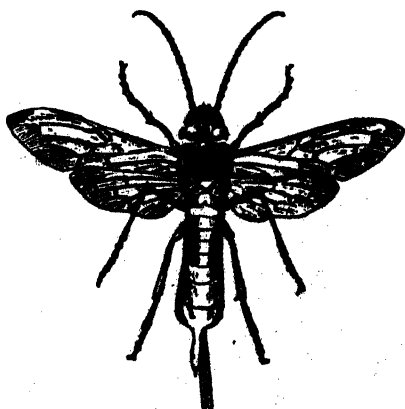


Fig. 12.

Female Sirex. Slightly enlarged.

silver fir are the species most frequently attacked, the larvæ penetrating into the wood, and leaving it more or less useless for conversion

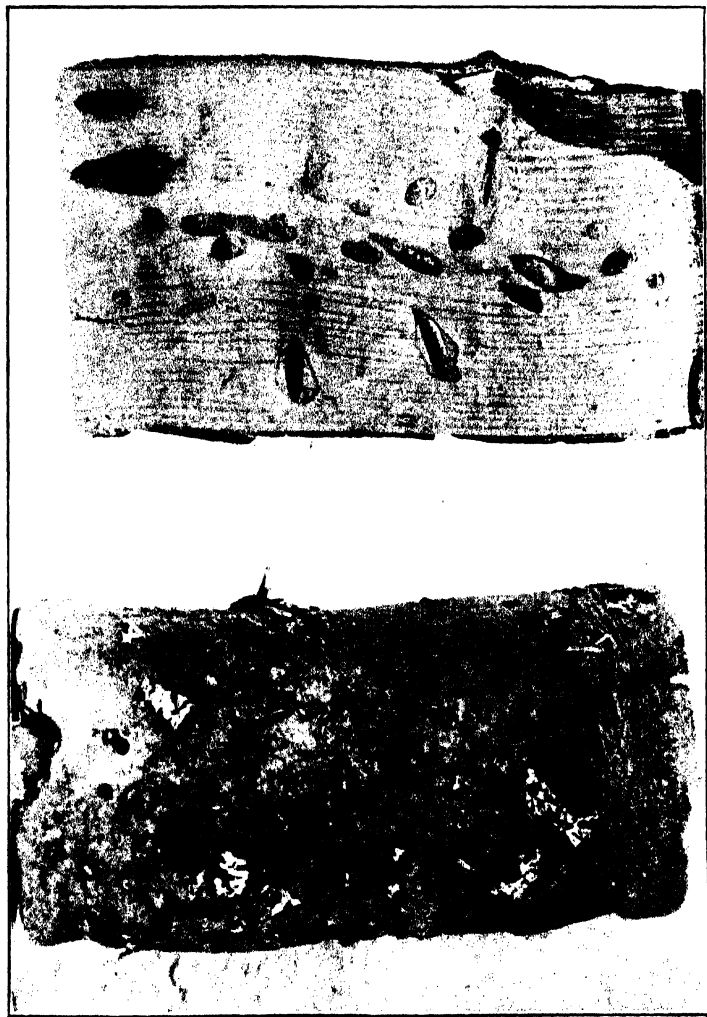


Fig. 13.
Silver fir wood damaged by Giant Sirex (*Sirex gigas*).



Fig. 15.

Willow stem perforated by Caterpillars of Goat Moth.

into rails, boards, etc. (Fig. 13). The most efficient remedy is that of cutting the timber between July and April, and sawing it up before the month of May, when the wood wasps first appear. Another species, the Steel Blue Sirex, is chiefly found in Scots pine, but appears to be a scarcer insect in Great Britain than the other, judging by the small amount of damage done to pine timber.

The most serious damage done to the timber of broad-leaved trees is committed by the caterpillars of the Goat Moth, which live in the timber for two or three years (Figs. 14 and 15). Their

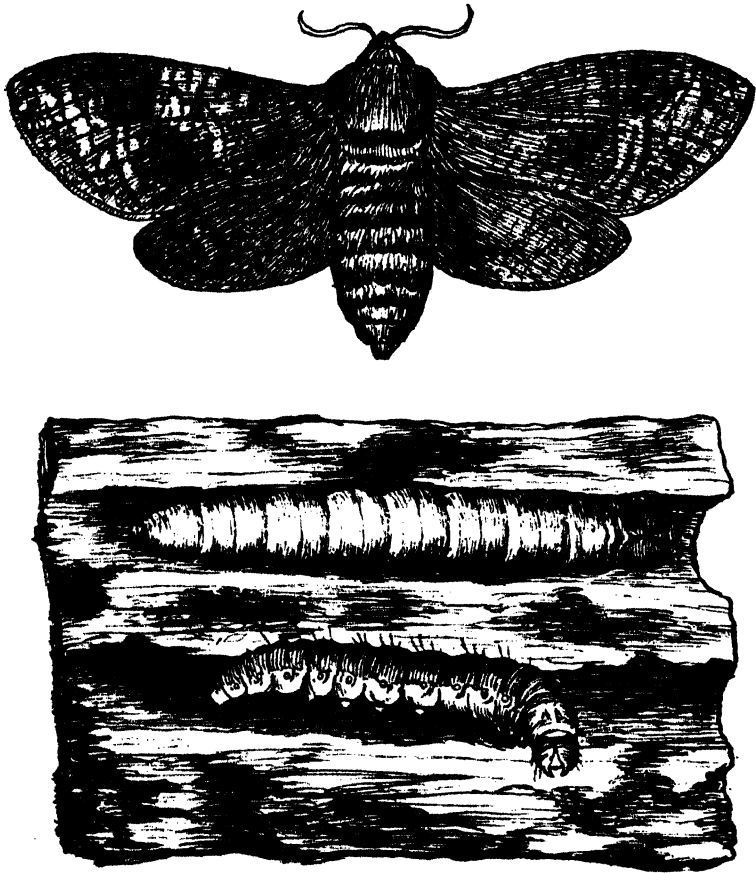


Fig. 14.

Moth and Caterpillars of Goat Moth (*Cossas ligniperda*). Natural size.

ravages are chiefly confined to damaged or sickly elms, limes, oaks, willows, poplars, etc., and the best remedy is to cut trees that are

attacked, as nothing can be done to remedy the damage, and the protection of the trees against further attack by painting and smearing is troublesome and more or less ineffective, but may be tried where it is desired to save specimen trees.

While the insects above mentioned are those most commonly met with in every-day practice for which preventive measures are needed at one time or another, the following may be regarded as injurious to a minor extent, but not sufficiently so to warrant special preventive measures being adopted.

Three bark beetles—*Hylastes ater*, *Tomicus bidens*, and *Cryphalus abietis*—are often found attacking recently transplanted conifers, and may sometimes be the means of destroying trees in a critical condition. On old ash, *Hylesinus crenatus*, the larger Ash Bark Beetle, may sometimes be injurious, but the commoner species (*H. frazini*) is seldom found breeding in living trees. The Larch Shoot Moth (*Tinea* or *Argyresthia laevigatella*) kills the end of the larch shoots in large numbers, but does not appear to permanently damage healthy trees. The Pine Shoot and Pine Bud Moth (*Retinia buoliana* and *turionana*) damage and destroy the buds and growing shoots of Scots pine, chiefly in young plantations. Scale insects, aphides, caterpillars of numerous moths, weevils, gall flies, etc., etc., which are technically regarded as injurious to timber trees, might also be enumerated, but, taken as a whole, they do not seriously interfere with the development of trees growing under healthy conditions.

Descriptions and records of many of these insects found in Ireland are contained in the more recent Economic Reports of the Royal Dublin Society.

A. C. FORBES.

WINTER MILK PRODUCTION.

[*** The loss which Ireland suffers owing to the fact that the bulk of the milk produced in this country is of summer production has been pointed out repeatedly, and various suggestions have been made for encouraging farmers to produce larger quantities of milk in winter. It is very generally admitted that some of the butter made in Ireland is as fine as any in the world, yet, notwithstanding its high quality, the average price of Irish creamery butter is lower than that of the butter produced in some other countries. In explanation of this state of affairs it is said that as in winter Ireland places little butter on the market, she loses her customers in the British butter markets, and that, therefore, she has to be satisfied with low prices when she offers large supplies of summer butter for sale. Farmers have been constantly urged to take up the production of milk in winter, but they have objected on the ground that winter milk production does not pay at present prices. To meet this objection, and to ascertain the cost of producing milk in winter, the Department instituted an experiment in the year 1907 at their Clonakilty Agricultural Station, the results of which tended to show that winter dairying was not unprofitable. Experiments of the same kind are being repeated at Clonakilty, but it is not intended to publish the results until the figures of a series of years can be collated. In the meantime, however, it was considered desirable to have experiments started in connection with ordinary farms, and the following are the reports of two such experiments carried out in County Cork, under the auspices of the County Cork Committee of Agriculture, whose Agricultural Instructors, Messrs. Adams and Prendergast, were each in charge of one centre. In addition to these experiments two others of similar character are being carried out in the North of Ireland, while still another on different lines is being conducted at the Centenary Creamery, Thurles. It is intended to publish the results of the Ulster experiments and also those obtained at the Centenary Creamery in subsequent reports.]

I. REPORT ON WINTER DAIRYING EXPERIMENT CARRIED OUT ON THE FARM OF MR. C. O'CALLAGHAN, GLANTANE, MALLOW.

By J. M. ADAMS, A.R.C.Sc.I., N.D.A., *Instructor in Agriculture.*

The systems of dairy farming for butter production in Ireland at present may be classified as follows:—

System I.—Cows calve from end of March till May; are fed on hay alone during winter up to time of calving; a few roots are raised to

feed for three or four weeks after calving and before cows are put on grass, or hay only is given; concentrated foods all purchased; most milk produced during grass months.

System II.—Cows calve from end of March till May; sufficient roots, grain, straw, and hay are raised to feed all through winter; most milk produced during grass months.

System III.—Cows calve at different periods during the year; sufficient roots, grain, straw and hay are raised to feed during winter months; soiling raised for autumn and spring feeding; milk produced all the year round.

The first system is practised generally in the grass districts, and is largely the outcome of the tendency to decrease labour. The cows are merely kept in existence during winter. They only reach their highest milk yield some time after going on grass and when recovered from the effects of their bad keep during winter. A late or bad grass season seriously affects their milk yield.

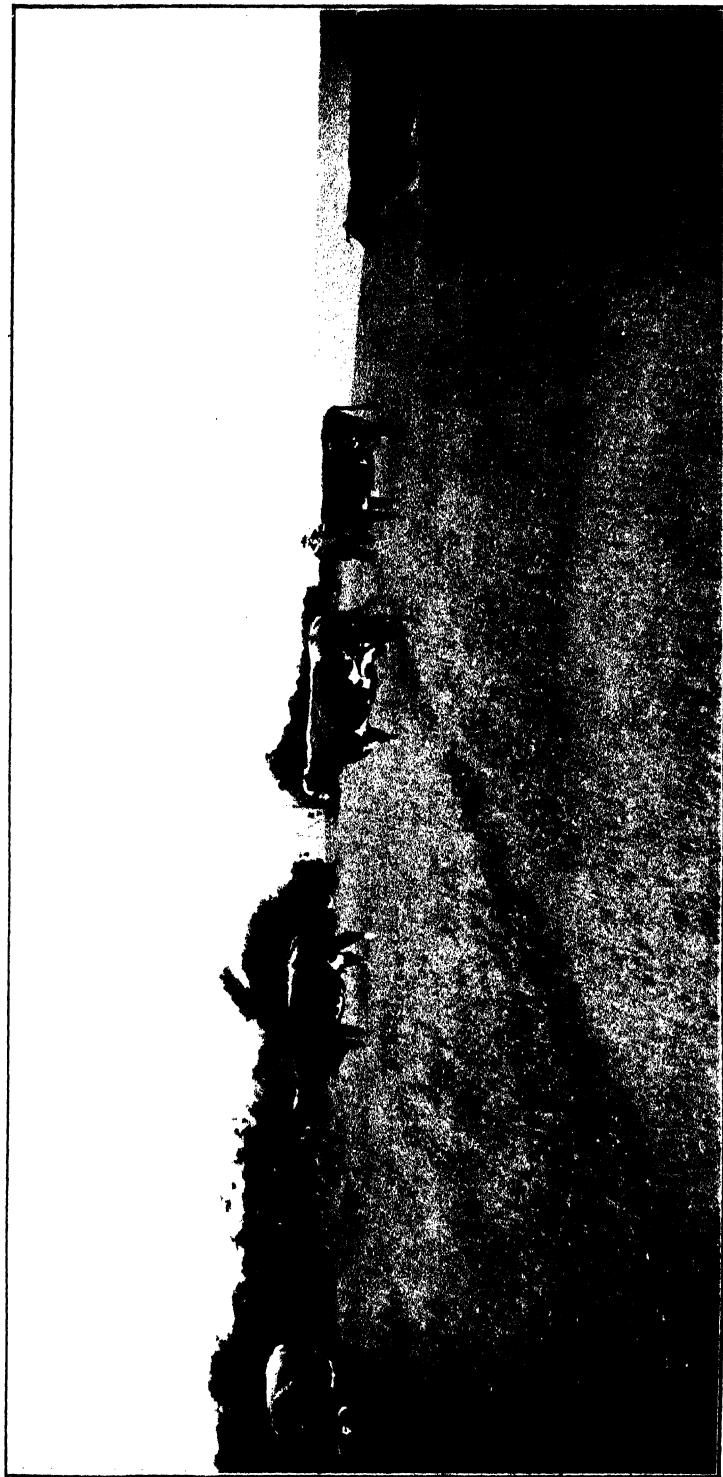
The second system is carried on in districts where more tillage is practised. The cows get roots during late autumn and winter, and in late grass seasons are better fed after calving than under the first system.

The third system, under which cows calve in March and April and in late autumn or early winter in order to produce a regular supply of milk, is practised only by a small minority of farmers.

Roughly estimated, at least 80 to 85 per cent. of the dairy cows kept for butter production calve from March to May. The low price of butter, when these cows are at their highest production, offers little inducement to increase their yield, or improve the milking capacities of any particular herd; and it is probable that an increase in the quantity of butter during the months of greatest production would make the prices for these months still lower.

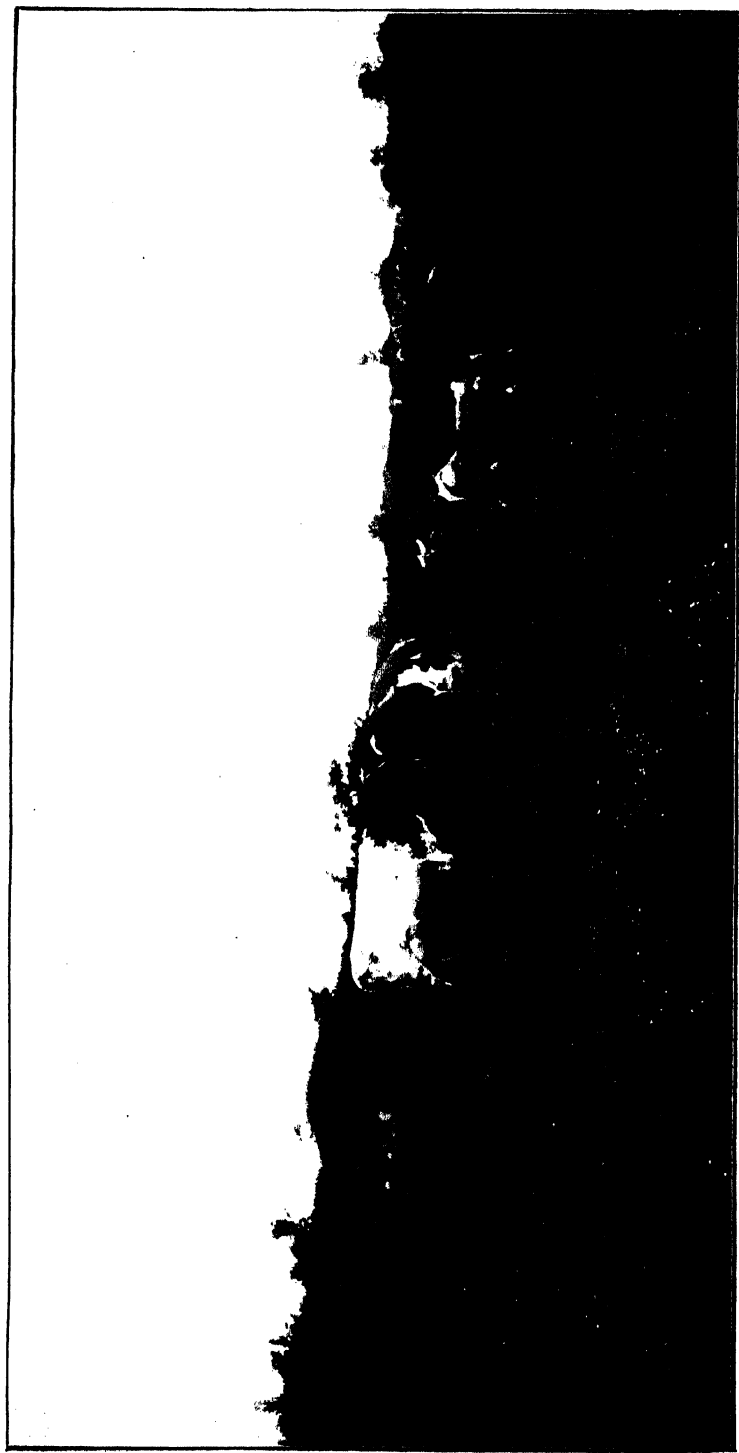
Butter merchants and creamery managers state that, if an approximately uniform quantity of butter were produced all the year round, better prices would be secured and the average yearly price of butter raised. But, if the present prices for butter or milk at a creamery would not pay for all the year round production, the mere statement that under such a system prices would probably improve cannot be expected to induce farmers to adopt such a system.

WINTER MILK PRODUCTION.



Winter Calvers.—East Cork.

WINTER MILK PRODUCTION.



Summer Calvers.—East Cork.

The question, therefore, is—Will it pay to produce milk all the year round at present prices either for butter or milk sold to the creamery?

In October, 1907, the County Cork Committee of Agriculture, in conjunction with the Department, made arrangements to carry out a Dairying Experiment on the farm of Mr. C. O'Callaghan, Scarra, Glantane, near Mallow, to compare the receipts and expenditure connected with winter and summer milk production.

The method of working the experiment was as follows:—Two sets of cows were chosen, one lot timed to calve in

The Scheme November, and the other lot in the following April.

of the The milk yield during the entire milking period of

Experiment. each cow was weighed, morning and evening.

Separate samples of the morning and evening milk of the cows were taken. At the end of each week these samples were sent to Mr. D. J. O'Mahony, F.C.S., City and County Analyst, Cork, who tested them for butter fat. Each test was therefore made from a composite weekly sample of the morning and evening milk of each cow.

The actual quantity of food given to the two lots of cows, while hand fed, was weighed.

Mr. O'Callaghan's son, Mr. W. O'Callaghan, had charge of the details in connection with the milking, the weighing and sampling of the milk, the weighing of foods, and the feeding and management of the cows. He devoted the greatest care and attention to the carrying out of the experiment.

When the experiment was commenced, Mr. O'Callaghan, who had four cows timed to calve in November, purchased one springing cow, at £13 15s., to complete the set of five winter milkers.

In April, one springing cow also had to be purchased, at a cost of £12, in order to complete the set of cows representing the summer system of dairying.

The two lots of cows were as nearly as possible of the same type, judging from appearance, and of approximately equal average value. Numbers 1, 2, 3, 7 and 8 were second or third Shorthorn crosses; the others were cross-bred cows.

Two of the cows were weighed. No. 4 weighed 10 cwts., and No. 6 weighed 10½ cwts. The average weight of each cow in both lots may be taken as 10 cwts.

Their approximate values were as follows:—

WINTER COWS.

No.	1	.	.	.	£16
„	2	.	.	.	£17
„	3	.	.	.	£16
„	4	.	.	.	£17
„	5	.	.	.	£14
Total,					£80

SUMMER COWS.

No.	6	.	.	.	£19
„	7	.	.	.	£16
„	8	.	.	.	£13
„	9	.	.	.	£13
„	10	.	.	.	£16
Total,					£77

The following table gives details with respect to the age, date of calving, date when dry, number of days in milk, yield of milk, per cent. of butter fat, and average daily yield of the ten cows:—

NOVEMBER CALVERS.

No. of Cow.	Age.	Date of Calving	Date when dry.	Number of days in milk.	Total yield of milk	Per cent. of butter fat.	Aver- age daily yield.
	years.			days.	gals.		gals.
1	4	9th Nov., 1907,	10th Oct., 1908,	336	996	3.59	2.96
2	8	10th „ „	19th Sept., „	314	927½	3.63	2.95
3	8	17th „ „	19th „ „	307	806	3.86	2.62
4	8	21st „ „	19th „ „	303	694	3.71	2.29
5	7	4th Dec. „	16th Oct. „	317	759	3.44	2.40

APRIL CALVERS.

No. of Cow.	Age.	Date of Calving	Date when dry.	Number of days in milk	Total yield of milk	Per cent. of butter fat	Average daily yield.
6	years. 9	28th Mar., 1908,	2nd Mar., 1909,	days. 339	gals. 991	3-65	gals. 2-92
7	4	29th " "	26th Dec., 1908,	272	416	3-26	1-53
8	3	3rd April "	1st Mar., 1909,	332	630½	3-62	1-90
9	7	11th " "	10th Jan., 1909	274	454½	3-77	1-66
10	8	14th " "	4th March, "	324	900½	3-50	2-78

The milk was sent to Lombardstown Co-operative Creamery, a distance of two miles.

The table appended gives particulars of the total yield per month from each set of cows, and the prices received per gallon :—

	November Calvers.		April Calvers.	
	Yield of milk per month.	Price per gallon.	Yield of milk per month	Price per gallon.
	gals.	pence.	gals.	pence.
1907, November, .	207-9	4-97	—	—
" December, .	511-6	5-84	—	—
1908, January, .	542-2	5-50	—	—
" February, .	507-3	5-67	—	—
" March, .	490-6	4-77	—	—
" April, .	434-7	4-22	389-4	4-22
" May, .	458-0	3-91	525-4	3-91
" June, .	411-1	4-10	523-6	4-10
" July, .	326-3	4-40	454-2	4-40
" August, .	211-5	4-40	377-8	4-40
" September, .	74-4	*5-52	296-1	*5-0
" October, .	7-5	5-26	263-3	5-26
" November, .	—	—	224-2	5-46
" December, .	—	—	139-3	6-63
1909, January, .	—	—	113-7	5-85
" February, .	—	—	80-6	5-7
" March, .	—	—	6-3	5-0

* During the month of September separate samples of the milk from each lot of cows were taken, and a higher price was paid for the winter cows' milk owing to its higher percentage of fat. During the other months the milk from both lots of cows was mixed at the creamery, and samples taken from the bulk.

The following table gives details of the quantities of foods consumed, and the prices paid or charged for same for both sets of cows:—

WINTER CALVERS.

Name of food.	Quantity consumed.				Price per Ton.	Cost.
	Tons.	Cwts.	Qrs.	lbs.		£ s. d.
Hay,	4	18	3	19	£2 10s., .	12 7 4
Straw,		15	1	8	£1,	0 15 4
D. Cotton Cake,		17	2	23	£9,	7 19 4
Bran,		6	1	26	£6 15s., . . .	2 3 9
Indian Meal,		11	2	5	£7,	4 0 9
Crushed oats,		14	3	16	£5 10s., . . .	4 1 10
Dried grains,		17	2	3	£6,	5 5 2
Roots,	23	13	1	0	10s.,	11 16 8
Soiling for 54 days,					3s. per week, .	1 3 2
Grazing,					£2 per cow, . .	10 0 0
					Total,	59 13 4

APRIL CALVERS.

Name of food.	Quantity consumed.				Price per Ton.	Cost.
	Tons.	Cwts.	Qrs.	lbs.		£ s. d.
Hay,	5	1	3	4	£2 10s., .	12 14 6
Straw,		9	1	19	£1,	0 9 6
D. Cotton Cake,		14	3	12	£9,	6 13 8
U.D. Cotton Cake,			1	2	£6,	0 1 7
Bran,		2	0	1	£6 15s., .	0 13 6
Indian Meal,		2	2	10	£7,	0 18 1
Crushed oats,	1	1	3	20	£5 10s. . .	6 0 7
Dried grains,		10	3	6	£6,	3 4 9
Roots,	16	13	0	14	10s., . . .	8 6 7
Soiling for 54 days,					3s. per week,	1 3 2
Yellow Globes for 6						
weeks,					1s. 8d. ,,	0 10 0
Grazing,					£2 per cow,	10 0 0
					Total, . .	50 15 11

Dried grains, meal, cake and bran are charged at cost price; oats, hay, straw and roots at current prices, or what they would have realised if sold.

The November calvers were allowed out for a few hours on fine days for exercise during the winter months, but on severe days they were only allowed out for a very short time.

A meal mixture was made up, consisting of:—

3 parts Decorticated Cotton Cake.

2 „ Indian Meal.

2 „ Crushed Oats.

1 „ Bran.

The November calvers were given 7 lbs. per head per day of this

mixture; 64 lbs. roots, 10 lbs. hay, and 5 lbs. straw

Daily during the early part of the winter. In and after

Rations. December, 6 lbs. of the meal mixture and 3 lbs.

of dried grains were given, and the fodder consisted

at first of 15 lbs. of hay only, increased later in the season to 17 lbs. per

head per day. This ration is equal to 28 lbs. of dry matter per cow

per day, with an albuminoid ratio of 1 : 5. The April calvers got

the same feeding as the winter milkers, after calving and until put

on grass. Both lots of cows were put on grass on the 16th May.

The roots were pulped and mixed with the meals and cake, and the dried grains were steeped in boiling water and mixed with the pulped roots and meals.

During winter the cows were given half their daily allowance of roots and concentrated foods in the morning, and then a foddering of hay. They were allowed out in the middle of the day, and were given a foddering of hay when put in again. In the evening they received the second half of their allowance of roots and concentrated foods.

The feeding was comparatively simple, and involved very little trouble. Attention was paid to feeding and milking at regular hours.

The winter milkers were given vetches on the grass in summer, but no other hand feeding until their twelve months' period expired. The April calvers received vetches and a small quantity of cake on the grass in summer. From the 1st September, additional cake and crushed oats or dried grains were given, and, as the winter advanced, roots, hay, and straw were also added. The housing of the cattle at night commenced on the 6th December. From the end of February, 1909, they were given roots and hay only.

The following tables show the weekly milk yield in gallons, the weekly value of same, the cost of foods consumed per week, the monthly price received per gallon for the milk, and the average weekly percentage of butter fat of the two sets of cows.

TABLE.

Showing Weekly Milk Yield, Value of same, Weekly Cost of Food, Monthly Price of Milk per gallon, and Average Weekly Percentage of Butter Fat, for Five Cows Calving in November.

Week ended	Weekly Milk Yield (in gallons)	Weekly Value of Milk	Weekly Cost of Food	Monthly Price received for Milk per gallon (in pence and decimals of a penny)	Weekly average percentage of Butter Fat
		s. d.	s. d.		
Nov. 16, .	43	20 8	14 0	5-0	—
" 23, .	74	35 4	16 8	—	—
" 30, .	91	43 4	20 8	—	—
Dec. 7, .	101	54 8	30 8	—	—
" 14, .	116	64 0	36 8	5-8	3-6
" 21, .	119	66 0	36 8	—	3-7
" 28, .	123	68 0	36 8	—	3-6
Jan. 4, .	122	66 0	36 8	—	3-6
" 11, .	118	62 0	39 4	—	3-8
" 18, .	124	64 8	39 4	5-5	3-7
" 25, .	125	66 0	39 4	—	3-6
Feb. 1, .	122	64 8	39 4	—	3-4
" 8, .	126	68 8	39 4	—	3-6
" 15, .	124	67 4	40 8	5-7	3-4
" 22, .	124	66 8	40 8	—	3-5
" 29, .	114	61 4	40 8	—	3-4
March, 7, .	114	53 4	42 0	4-7	3-
" 14, .	117	54 0	42 0	—	3-4
" 21, .	109	52 0	41 4	—	3-7
" 28, .	106	49 4	41 4	—	3-5
April 4, .	100	44 8	41 4	—	3-7
" 11, .	102	42 8	42 8	4-2	3-7
" 18, .	103	43 4	42 8	—	3-5
" 25, .	101	42 0	42 8	—	3-6
May 2, .	100	40 8	42 8	—	3-5
" 9, .	102	40 0	26 0	3-9	3-5
" 16, .	104	40 8	26 0	—	3-4
" 23, .	108	42 0	8 0	—	3-0
" 30, .	98	38 8	8 0	—	3-3
June 6, .	102	40 8	8 0	—	3-4
" 13, .	103	42 0	11 4	4-1	3-4
" 20, .	99	40 8	8 8	—	3-5
" 27, .	86	35 4	8 0	—	3-7
July 4, .	84	35 4	8 0	—	3-5
" 11, .	81	34 8	10 0	4-4	3-6
" 18, .	74	32 0	10 8	—	3-7
" 25, .	68	29 4	10 8	—	4-0
Aug. 1, .	65	28 0	10 8	—	3-8
" 8, .	57	24 8	10 8	4-4	3-8
" 15, .	54	23 4	10 8	—	3-8
" 22, .	45	20 0	10 0	—	4-0
" 29, .	37	16 0	8 0	—	4-2
Sept. 5, .	30	16 8	8 0	—	4-3
" 12, .	21	11 4	8 0	5-5	4-4
" 19, .	18	8 8	8 0	—	4-0
" 26, .	11	5 4	8 0	—	4-8
Oct. 3, .	6	2 8	8 0	—	5-0
" 10, .	4	1 4	8 0	5-2	4-4
" 17, .	2	0 8	8 0	—	—
" 24, .	—	—	8 0	—	—
" 31, .	—	—	8 0	—	—
Nov. 7, .	—	—	8 0	—	—

TABLE.

Showing Weekly Milk Yield, Value of same, Weekly Cost of Food, Monthly Price of Milk per gallon, and Average Weekly Percentage of Butter Fat, for Five Cows Calving in April.

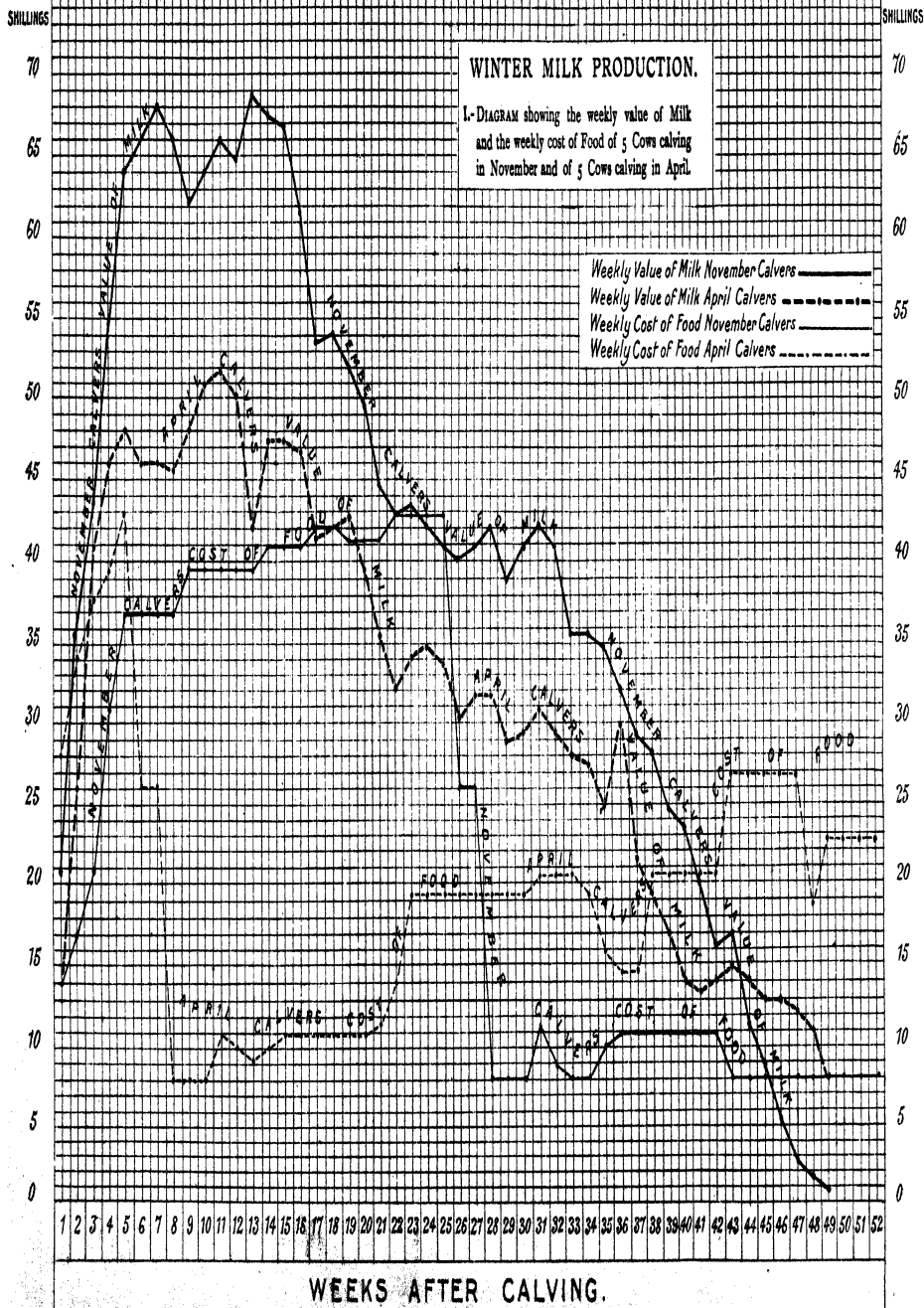
Week ended	Weekly Milk Yield (in gallons)	Weekly Value of Milk		Weekly Cost of Food		Monthly Price received for Milk per gallon (in pence and decimals of a penny)	Weekly average percentage of Butter Fat
		s.	d.	s.	d.		
April 4, .	34	14	0	28	0	4-2	—
" 11, .	62	26	0	34	0	—	—
" 18, .	97	40	8	37	4	—	—
" 25, .	110	46	0	39	4	—	—
May 2, .	118	48	0	43	0	3-9	3-8
" 9, .	118	46	0	26	0	—	3-6
" 16, .	118	46	0	26	0	—	3-4
" 23, .	116	45	4	8	0	—	3-3
" 30, .	122	48	0	8	0	—	3-2
June 6, .	125	50	8	8	0	4-1	3-3
" 13, .	126	51	4	10	8	—	3-3
" 20, .	122	50	0	10	0	—	3-3
" 27, .	117	42	0	9	4	—	3-3
July 4, .	113	47	4	10	0	4-4	3-3
" 11, .	109	47	4	10	8	—	3-4
" 18, .	102	46	8	10	8	—	3-3
" 25, .	96	41	4	10	8	—	3-6
Aug. 1, .	98	42	0	10	8	4-4	3-3
" 8, .	98	42	8	10	8	—	3-4
" 15, .	91	39	4	10	8	—	3-2
" 22, .	81	35	4	11	4	—	3-2
" 29, .	74	32	0	14	0	—	3-8
Sept. 5, .	72	34	0	19	4	5-0	3-6
" 12, .	73	34	8	19	4	—	4-0
" 19, .	70	33	4	19	4	—	3-9
" 26, .	64	30	8	19	4	—	4-0
Oct. 3, .	64	31	4	19	4	5-3	4-2
" 10, .	62	31	4	19	4	—	3-9
" 17, .	57	28	8	19	4	—	3-8
" 24, .	58	29	4	19	4	—	3-8
" 31, .	60	30	8	20	8	—	3-3
Nov. 7, .	57	29	4	20	8	5-5	3-9
" 14, .	54	28	0	20	8	—	3-9
" 21, .	52	27	4	19	4	—	3-6
" 28, .	48	24	8	15	4	—	3-9
Dec. 5, .	41	30	0	14	8	6-6	4-4
" 12, .	35	21	4	14	8	—	4-1
" 19, .	32	19	4	21	4	—	4-7
" 26, .	27	16	8	21	4	—	4-4
Jan. 2, .	24	14	0	21	4	5-8	4-6
" 9, .	24	13	4	21	4	—	4-7
" 16, .	26	14	0	21	4	—	3-8
" 23, .	27	14	8	26	8	—	4-4
" 30, .	25	14	0	26	8	—	3-9
Feb. 6, .	24	12	8	26	8	5-7	3-9
" 13, .	24	12	8	26	8	—	4-0
" 20, .	22	12	0	26	8	—	4-0
" 27, .	12	6	0	18	8	—	4-2
March 6, .	6	2	8	22	8	5-0	—
" 13, .	—	—	—	22	8	—	—
" 20, .	—	—	—	22	8	—	—
" 27, .	—	—	—	22	8	—	—

TABLE.

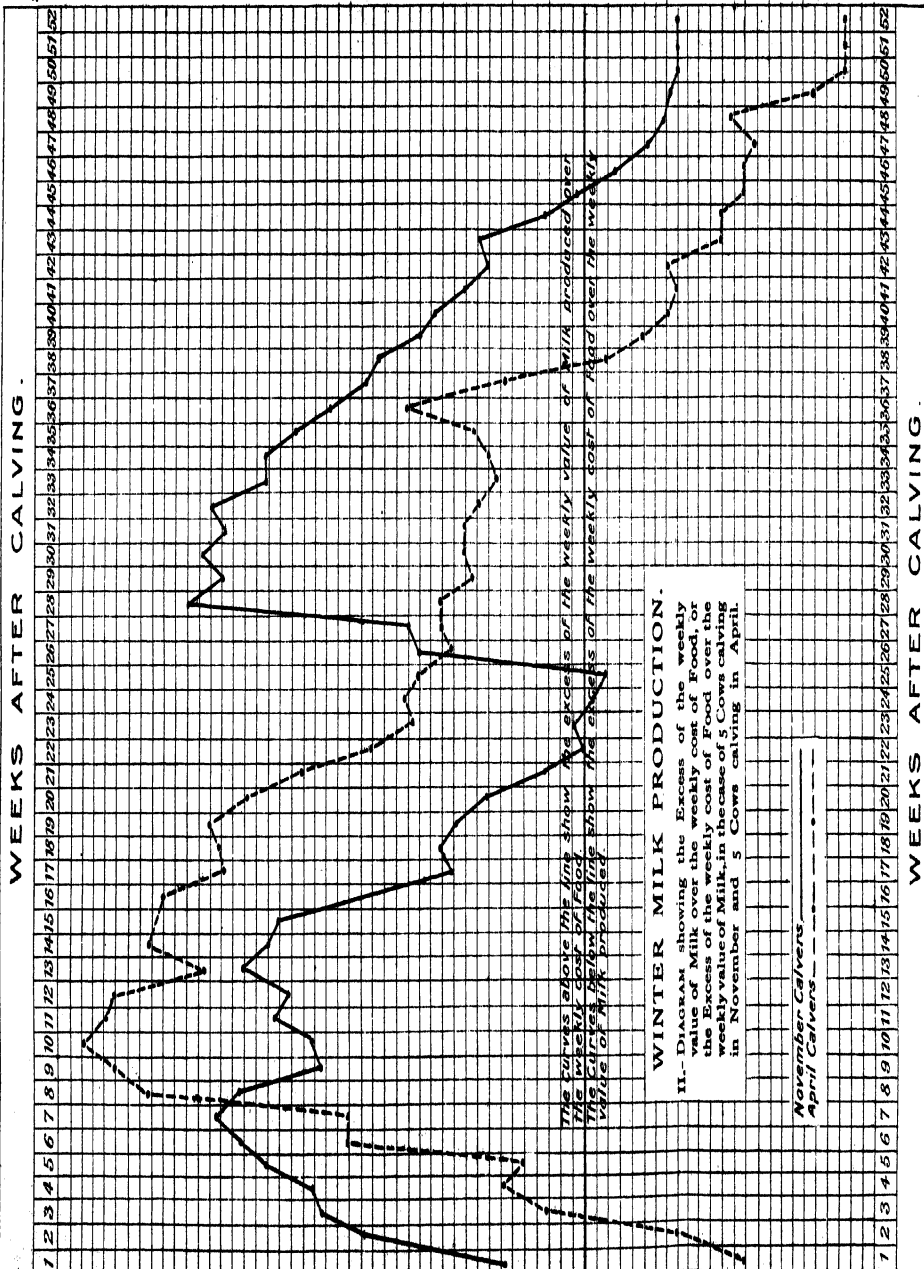
Showing Weekly Milk Yield, Value of same, and Weekly Cost of Food for Two Sets of Cows, one Set Calving in November, the other in April.

November Calvers.		April Calvers.		Weekly milk yield in galls.		Weekly value of milk.		Weekly cost of food.	
Week ended		Week ended		Nov. Calvers.	April Calvers.	Nov. Calvers.	April Calvers.	Nov. Calvers.	April Calvers.
1907.		1908.				s. d.	s. d.	s. d.	s. d.
Nov. 16.	April 4.	43	34	20	8	14	0	14	0
" 23.	" 11.	74	62	35	4	26	0	16	8
" 30.	" 18.	91	97	43	4	40	8	20	8
Dec. 7.	" 25.	101	110	54	8	46	0	30	8
" 14.	May 2.	116	118	64	0	48	0	36	8
" 21.	" 9.	119	118	66	0	46	0	36	8
" 28.	" 16.	123	118	68	0	46	0	36	8
1908.									
Jan. 4.	" 23.	122	116	66	0	45	4	36	8
" 11.	" 30.	118	122	62	0	48	0	39	4
" 18.	June 6.	124	125	64	8	50	8	39	4
" 25.	" 13.	125	126	66	0	51	4	39	4
Feb. 1.	" 20.	122	122	64	8	50	0	39	4
" 8.	" 27.	126	117	68	8	42	1	39	4
" 15.	July 4.	124	113	67	4	47	4	40	8
" 22.	" 11.	124	109	66	8	47	4	40	8
" 29.	" 18.	114	102	61	4	46	8	40	8
Mar. 7.	" 25.	114	96	53	4	41	4	42	0
" 14.	Aug. .	117	98	54	0	42	0	42	0
" 21.	" 8.	109	98	52	0	42	8	41	4
" 28.	" 15.	106	91	49	4	39	4	41	4
April 4.	" 22.	100	81	44	8	35	4	41	4
" 11.	" 29.	102	74	42	8	32	0	42	8
" 18.	Sept. 5.	103	72	43	4	34	0	42	8
" 25.	" 12.	101	73	42	0	34	8	42	8
May 2.	" 19.	100	70	40	8	33	4	42	8
" 9.	" 26.	102	64	40	0	30	8	26	0
" 16.	Oct. 3.	104	64	40	8	31	4	26	0
" 23.	" 10.	108	62	42	0	31	4	8	0
" 30.	" 17.	98	57	38	8	28	8	8	0
June 6.	" 24.	102	58	40	8	29	4	8	0
" 13.	" 31.	103	60	42	0	30	8	11	4
" 20.	Nov. 7.	99	57	40	8	29	4	8	8
" 27.	" 14.	86	54	35	4	28	0	8	0
July 4.	" 21.	84	52	35	4	27	4	8	0
" 11.	" 28.	81	48	34	8	24	8	10	0
" 18.	Dec. 5.	74	41	32	0	30	0	10	8
" 25.	" 12.	68	35	29	4	21	4	10	8
Aug. 1.	" 19.	65	32	28	0	19	4	10	8
" 8.	" 26.	57	27	24	8	16	8	10	8
1909.									
" 15.	Jan 2.	54	24	23	4	14	0	10	8
" 22.	" 9.	45	24	20	0	13	4	10	0
" 29.	" 16.	37	26	16	0	14	0	8	0
Sept. 5.	" 23.	30	27	16	8	14	8	8	0
" 12.	" 30.	21	25	11	4	14	0	8	0
" 19.	Feb. 6.	18	24	8	8	12	8	8	0
" 26.	" 13.	11	24	5	4	12	8	8	0
Oct. 3.	" 20.	6	22	2	8	12	0	8	0
" 10.	" 27.	4	12	1	4	6	0	8	0
" 17.	Mar. 6.	2	6	0	8	2	8	8	0
" 24.	" 13.	—	—	—	—	—	—	8	0
" 31.	" 20.	—	—	—	—	—	—	8	0
Nov. 7.	" 27.	—	—	—	—	—	—	8	0

WEEKS AFTER CALVING.



WEEKS AFTER CALVING.



WINTER MILK PRODUCTION.

II. - DIAGRAM showing the Excess of the weekly value of Milk over the weekly cost of Food, or the Excess of the weekly cost of Food over the weekly value of Milk, in the case of 5 Cows calving in November and 5 Cows calving in April.

November Calvers - - - - -

April Calvers - - - - -

WEEKS AFTER CALVING

SHILLINGS

45
44
43
42
41
40
39
38
37
36
35
34
33
32
31
30
29
28
27
26
25
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23
22
21
20
19
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17
16
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14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1
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6
7
8
9
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11
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15
16
17
18
19
20
21
22
23
24
25

SHILLINGS

45
44
43
42
41
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30
29
28
27
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25
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25

These tables strikingly bring out some of the more important points in the results of the experiment.

Attention is first directed to the figures representing the weekly milk yield of both sets of cows. The long milking period during which the November calvers yielded over a certain quantity of milk per week, and the very short period during which the April calvers yielded over an equal quantity of milk should be noted.

The November calvers yielded per week 100 gallons of milk or over for 27 weeks, while the April calvers yielded per week 100 gallons or over for only 13 weeks. This is equal to an average yield for each of the November calvers of three gallons per day, or over, for 203 days; and an average yield for each of the April calvers of three gallons per day, or over, for only 91 days.

The two lots of cows gave an equal quantity of milk during their week of highest yield. In the case of the winter milkers this occurred during the week ended 8th February, 1908; and for the summer milkers during the week ended 13th June, 1908, the quantity being 126 gallons.

When the winter milkers were put on grass at the beginning of May, the milk yield increased slightly. This is shown in the table on page 674.

Again, on comparing the prices received for milk with the milk yield, it will be seen that the November calvers maintained their highest yield during the months when milk commanded the highest prices; whereas the April calvers gave their maximum yield during the two months when prices for milk were lowest.

Further, if the figures showing the weekly values of the milk prices by the two sets of cows are examined, it will be seen that the five winter milkers yielded milk value for £3 per week, or over, for twelve weeks, or value for £2 per week, or over, for twenty-nine weeks; on the other hand, the value of the milk yielded by the five summer milkers never reached £3 for any one week, and was value for £2, or over, for only seventeen weeks.

Attention is also directed to the figures showing the cost of foods. In the case of the summer milkers the cost of foods consumed was greater than the value of the milk yielded for seventeen weeks; but in the case of the winter milkers the cost of foods exceeded the value of the milk yielded for only nine weeks.

A point of great interest is the effect of changes in hand feeding on the milk yield. Increases or decreases in the food given are followed by corresponding changes in the milk yield, and to some extent in the butter fat test.

The long period of high yield, and the correspondingly high money value of the milk from the November calvers stand out prominently in comparison with those of the April calvers, as shown in the table on page 674.

The comparative cost of foods for each week after calving is also worth noting. The feeding of the summer cows costs more for the first five weeks after calving than that of the winter cows. For the next twenty-two weeks the feeding of the winter cows costs more, but for the remaining twenty-five weeks the feeding for the summer cows costs more than that for the winter lot.

The following tables are statements of the income and expenditure connected with the two sets of cows.

Statement of Income and Expenses connected with 5 Winter Milking Cows.

INCOME.			EXPENSES.		
	£	s. d.		£	s. d.
4,183 gallons milk at 4-87d. per gal.	84	17 1	Hay and Straw,	13	2 8
3,346 gallons separated milk at 1d. per gallon	13	18 10	Roots,	11	16 8
5 calves at 24s.	6	0 0	Cake, Bran, and Meals	23	10 10
Manure, 1 ton per cow per month for 6 months at 3s. per ton ..	4	10 0	Stabling,	1	3 2
			Grazing at £2 per cow	10	0 0
			Insurance at 5 per cent. on value of cows £80	4	0 0
			Allowance for depreciation at £1 per cow per annum	5	0 0
			Interest on capital	4	10 0
			Attendance during winter and summer,	4	17 0
			Service of bull at 2s. 6d. per cow ..	0	12 6
			Milking at 19s. per cow	4	15 0
			Delivering milk at creamery at 1d. per gallon	4	7 2
			Balance for profit	21	10 11
	£109	5 11		£109	5 11

The Balance is £21 10s. 11d., which equals a profit of £4 6s. 2d. per cow.

Statement of Income and Expenses connected with 5 Summer Milking Cows.

INCOME.			EXPENSES.		
	£	s. d.		£	s. d.
3,393 gallons milk at 4-6d. per gal.	65	5 2	Hay and straw,	13	4 7
2,714 gallons separated milk at 1d. per gallon	11	6 2	Roots,	17	12 2
5 calves at 24s.	6	0 0	Cake, bran and meals,	1	13 2
Manure at 2s. 4d. per cow per month for 6 months	3	10 0	Stabling,	10	0 0
			Grazing at £2 per cow	3	17 0
			Insurance at 5 per cent. on value of cows £77	5	0 0
			Allowance for depreciation at £1 per cow per annum	4	10 0
			Interest on capital	4	0 0
			Attendance during winter and summer	4	0 0
			Service of bull at 2s. 6d. per cow, ..	0	12 6
			Milking at 19s. per cow	4	15 0
			Delivering milk at creamery at 1d. per gallon	3	10 3
			Balance for profit	9	0 3
	£86	1 4		£86	1 4

The balance is £9 0s. 3d., which equals a profit of £1 16s. 1d. per cow.

The amount charged for grazing, namely, £2 per cow, covers rent and taxes (2 acres per cow, at 10s. for rent and 4s. for taxes per acre). This is equivalent to a charge of 6s. 8d. per cow per month, from May to November.

Insurance is charged at the rate of £5 per cent. on the value of the cows.

The allowance for depreciation might have been omitted, as the gross value of the cows at the conclusion of the experiment, was greater than at the beginning.

The sum of £4 10s. put down for interest on capital, includes interest on the capital invested in the cows and interest on a proportionate amount of the capital invested in the farm.

The comparatively small difference between the expenses charged for attendance on the two lots of cows may appear insufficient, but if cows are kept during winter, milking or dry, they must be attended to and fed. The additional expense of giving meals and cake to milking cows, in addition to the roots and hay dry cows would necessarily get, is very small.

Objection may be taken to the fact that the food consumed by the summer milkers cost only £8 17s. 5d. less than the food consumed by the winter milkers. It must, however, be remembered that the April calvers were hand fed until turned on the grass. Then, in order to keep up their yield in autumn and early winter, hand feeding with concentrated foods had again to be given, and, when dry, an allowance of roots and hay.

The cost of keep during winter, when dry, is less only by the value of the concentrated foods they would get if milking.

In this connection it may be also pointed out that if no concentrated foods whatever had been given to the five summer milkers after going on grass or during the autumn and early winter, and assuming that their milk yield was not reduced, their profits would be greater than that of the November calvers by a few shillings only. A reduction of twenty gallons per cow in their yield would render them considerably less profitable.

In reckoning the expenditure on each lot of cows, a period of twelve months was taken in each case. As the cows did not calve on the same dates, the cost of feeding each cow in both lots till calved is included from the respective dates in November and April, when the test started. The cost of feeding each cow when dry is also included up to the end of the twelve months period.

The five winter milkers were served and proved in calf on the following dates:—

Number of Cow.	Date of Service.
No. 1, . . .	22nd January, 1908.
„ 2, . . .	1st February, „
„ 3, . . .	18th „ „
„ 4, . . .	28th January, „
„ 5, . . .	11th April, „

With the exception of No. 5, this lot of cows dropped their calves on or about the same dates on which they calved in 1907. No. 5 ran one month later. Hence, with the exception of this cow, no time was lost before calving and it is quite fair to consider that the milk yield represents one year's return from the cows.

The dates on which the five summer cows were served are as follows:—

Number of Cow.	Date of Service.
No. 6, . . .	14th July, 1908.
„ 7, . . .	3rd „ „
„ 8, . . .	25th „ „
„ 9, . . .	26th „ „
„ 10, . . .	28th „ „

These cows also calved at corresponding dates to those of the previous year, and the remarks given above apply equally.

A somewhat higher value might have been put down to the calves dropped in November, as these calves were decidedly easier to rear, and better thrivers than the April calves.

Separated milk is valued at 1d. per gallon in both cases.

The average prices per gallon for the new milk was obtained by dividing the total number of gallons yielded by each lot of cows into the respective total sums received for their milk from the creamery.

It may be said that the prices obtained for the milk were abnormally high, but, granting this, the results would be even more favourable to winter production, since, as already stated, a proportionately higher price was obtained during the period April, 1908, to March, 1909, than from November, 1907, to October, 1908.

Two factors are essential to ensure profitable winter milk production :—

- | | |
|----------------------|--|
| Conditions of | 1. Cows capable of producing at least 650 gallons of milk per annum. |
| Success. | 2. The raising of sufficient home-grown foods to provide the bulk of the ration given. |

These essentials, in conjunction with a reasonable amount of attention to regular and suitable feeding and a comfortable cowhouse, will make winter milk production pay.

If a farmer has cows of low milking capacity, and has to purchase a large proportion of the food consumed, winter dairying, and probably any other system of dairying, would be unprofitable.

The substantially greater profit obtained from the winter milkers in this experiment is undoubtedly owing to the comparatively high average milk yield of the five winter cows, and this increased yield may be, without hesitation, attributed to the time of calving.

It has been pointed out that the winter milkers increased their yield when put on the grass. This second "springing," during the months of May and June, accounts for the gain of over 150 gallons per cow on the winter milkers' average. Even in July, the ninth month after calving, the average for the November calvers was over two gallons per cow per day; whereas in December, the corresponding month for the April-calved cows, the yield of the latter was less than one gallon per cow per day.

It may be assumed, with a reasonable amount of certainty, that a cow capable of producing 500 gallons of milk per annum when calving in April, will produce 100 to 160 gallons more if calved in November and is suitably housed and fed. Hence, arguing on this assumption, it may be taken that a summer cow, with a capacity of 650 gallons of milk per annum, would be a profitable winter milker, as, with proper attention, she is likely to produce 100 to 160 gallons more milk per annum, if calved in November.

Calculating on an increase of 150 gallons at 4.87d. per gallon (the price received for the winter cow's milk in the experiment), and allowing 1d. per gallon for the separated milk, the increased return would be £3 11s. per cow. This sum is just double the difference

between the cost of the foods consumed by each of the winter and summer milkers in the experiment. The actual figures were as follows :—

Cost of food, not including grass, consumed by each				
November calver	...	...	...	£9 18 8
Cost of food, not including grass, consumed by each				
April calver	...	...	...	8 3 2
Difference				£1 15 6

It is frequently stated that very few farmers have housing accommodation suitable for keeping winter milkers.

Winter Housing. It is important to note, however, that on Mr. O'Callaghan's farm the winter milkers were kept in a very rough building, 16 ft. x 11 ft., with a lean-to corrugated iron roof. The only alteration made was to put down a concrete floor. An earthenware trough was placed before each cow to hold the food.

There is no reason to doubt that, with a nominal outlay on the improvement of the floors in existing buildings, with due attention to ventilation and lighting, and an avoidance of draughts, the houses on many farms could be made quite suitable for winter milkers. At the same time, even when milkers are housed under the most favourable conditions, harsh wind and severe weather may effect their milk yield.

The farmer who produces milk in winter has a formidable difficulty to contend with, viz., cows cannot always be got to come to calve at the required season. Abortion will completely upset the best arranged schemes.

The extra capital required to produce milk in winter is also often said to be a powerful deterrent to this system, but, that this is the case, is doubtful. Sufficient home-grown food must be raised. This will involve more labour and capital, but for the farmer who is at present raising enough crop to feed his springing cows during winter, the increased capital required to feed and produce milk in winter from, say, the half of his cows, would be small, and, furthermore, there would be the great advantage of a regular turn-over of money from the cows during each month of the year.

Winter dairying must necessarily be accompanied by selection and improvement of dairy cows on the basis of their milking capacity. To

produce milk in winter profitably, the cows must be worth feeding, though this equally applies to cows kept for summer dairying.

The farmer who keeps indifferent milking cows, year after year; who feeds them from November to May on nothing but hay; who allows them to stand during these months from morning till night on a mud heap, exposed to all weathers, with the natural consequences of delicate calves, and cows too weak to milk; may ask himself, not so much whether winter milk production will pay, but what system would be less ruinous than that just described.

The cost of keeping a cow is, at a low computation, approximately £10 per year; this includes grazing, feeding during winter on hay only, attendance, milking, insurance, depreciation, interest on capital, delivery of milk and service of bull. To cover this cost, the cow should produce 480 gallons of milk at 5d. per gallon. The average annual milk yield of cows in Co. Cork is, probably, under 480 gallons. It is, therefore, evident that a large number of cows must be unprofitable.

As an instance of the valuable lesson taught by keeping milk records, attention is drawn to cow No. 6 in the experiment. This cow gave 575 gallons of milk, value for £12 18s. 9d., more than cow No. 7. The latter just paid for the food she consumed.

**Milk
Production.**

There are in Ireland over 1,500,000 dairy cows. An increased yield of one gallon per annum from each of these cows would mean, at 5d. per gallon, the production of £31,250 more wealth in the country, and an increase of a little over thirty gallons per cow per annum would yield an additional million pounds sterling.

If Irish dairy farmers would select their best milking cows, breed from these, and sell out every unprofitable cow, the average milk yield per cow would be raised 25 per cent. per annum. This increased yield could be attained without any addition to the cost of feeding; the bad milker will consume as much food as the good milker.

In conclusion, the chief points to be drawn from the experiment may be stated as follows:—

1. With suitable cows, properly dieted and housed, winter milk production will pay at present prices.
2. A cow to milk profitably during winter must be capable of producing 650 gallons of milk per annum.
3. Sufficient home-grown foods to form the bulk of the ration for winter feeding must be raised.

**The Lessons of
the Experiment.**

4. Winter milking cows must be regularly fed with a suitable ration, and comfortably housed.
5. A cow timed to calve in November will produce more milk per annum than when timed to calve in April, if suitably fed and housed.
6. Winter feeding improves the condition of the cows.
7. Existing buildings, with a few alterations, could be made suitable for winter milk production.
8. The production of manure and consequent fertility of the farm is increased by winter feeding.
9. The increased capital required to produce milk in winter is small.
10. It will pay the small farmer, as well as the large farmer, to produce milk in winter, if the conditions are suitable.
11. Winter calves thrive better and are easier reared than April calves. (See article on Calf-rearing, p. 695).

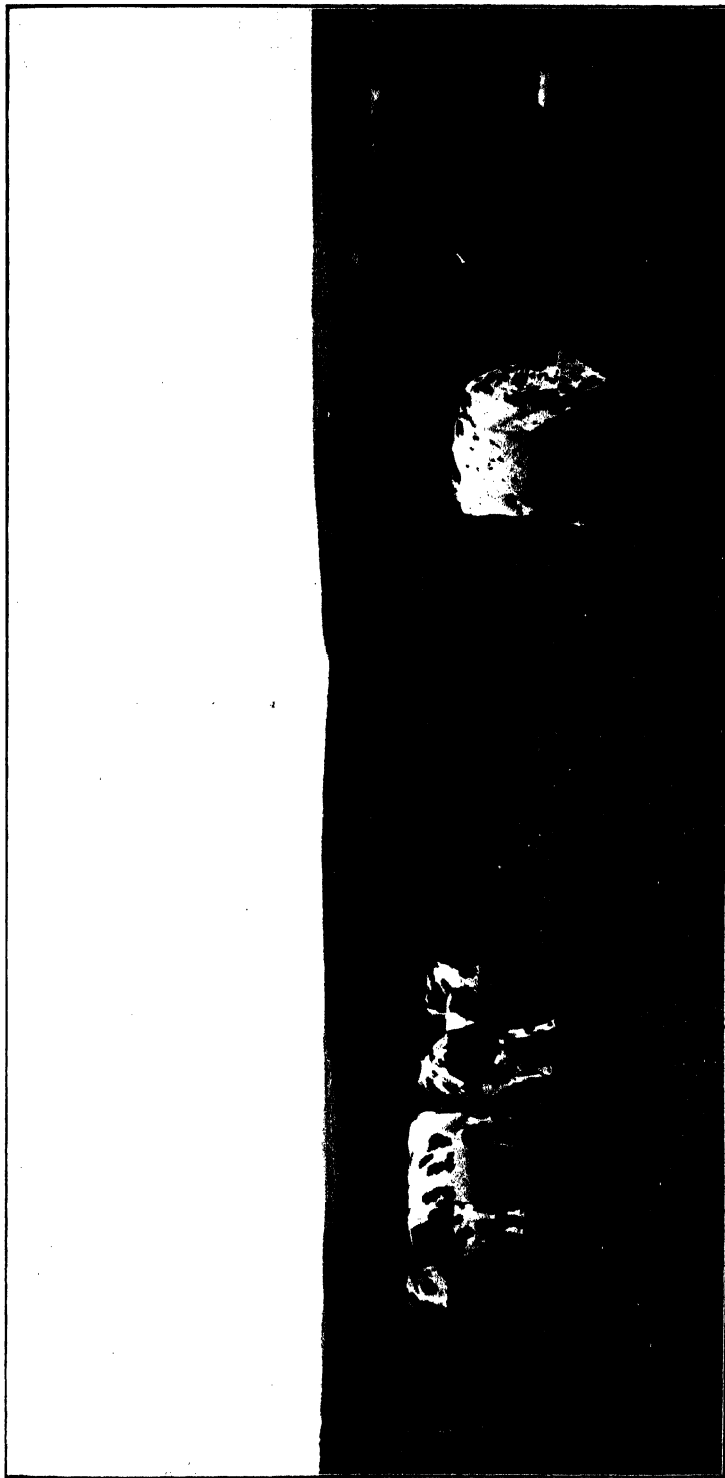
II. REPORT ON WINTER DAIRYING EXPERIMENT CARRIED OUT ON THE FARM OF MR. W. WOLFE, KINSALE.

By W. F. PRENDERGAST, A.R.C.Sc.I., *Instructor in Agriculture.*

"Does Winter Dairying pay?" And again, "Which is the more profitable—Winter or Summer Dairying?" These questions, or those of a similar nature, have been exercising the minds of agriculturists for years. As the answer to the second question given above will necessitate the working out of details necessary to the solution of question one, attention may be confined to the important problem: "Which is the more profitable: Winter or Summer Dairying?" To understand the question thoroughly, it is necessary to consider what is meant by Winter and Summer Dairying. For Winter Dairying, the cows are managed so as to calve during the month of October, November, or December, preferably in November. They are fed indoors during the winter and spring, and may or may not be allowed a run on grass for some time each day.

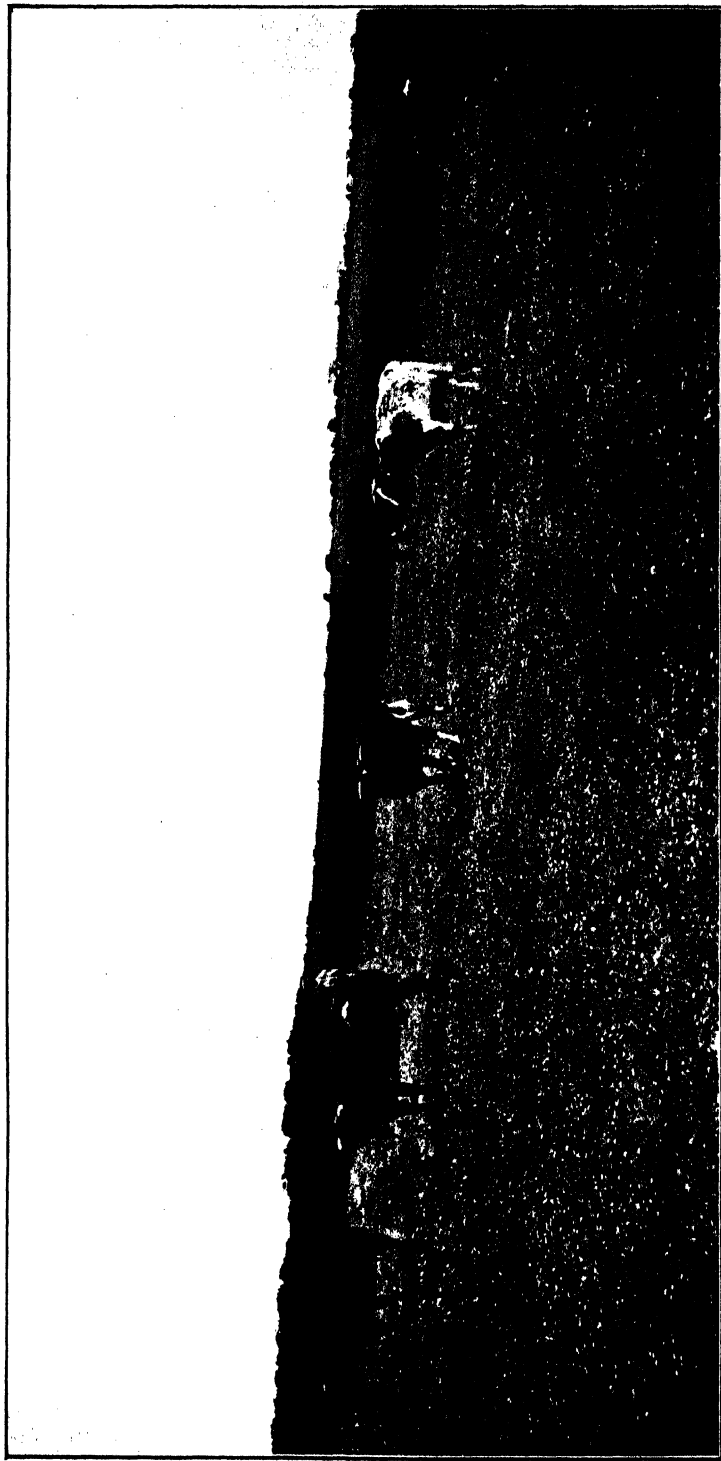
During summer the treatment varies according to the grass; if the grass is inferior, it is usual to supply a little concentrated food to cows remaining in milk towards the close of the season. For

WINTER MILK PRODUCTION.



Winter Calvers.—West Cork.

WINTER MILK PRODUCTION.



Spring Calvers.—West Cork.

Summer Dairying the cows usually calve during the month of March, April, or May; the majority, however, calve in April. There are two systems of feeding Summer Dairying cows—(a) grass alone during summer, and hay during winter; (b) grass with concentrated foods in summer, and hay and roots in winter, with concentrated foods to those giving milk.

Having made the issue clear, the means taken to arrive at a trustworthy conclusion must be set out. Ten cows

How the Experiment was Conducted. were selected on the farm of Mr. Wolfe, Kinsale, five for Winter and five for Summer Dairying. Four of the five winter cows were bought in at local fairs, as were two of the summer lot. Tables I. and I.A. show ages, value and origin of cows. The dates of calving are also given in those tables.

WINTER CALVERS.

TABLE I.—Showing value, age, and "history" of cows; also date of Calving.

No. of Cow.	Value at commencement of experiment.	Age at commencement of experiment	Where obtained.	Date of Calving.
1	£ s. d. *13 0 0	6 years .	Reared on farm, .	Nov. 23rd, 1907.
2	12 10 0	5 „ .	Bought locally as incalf cow.	Nov. 24th, 1907.
3	12 10 0	4 „ .	Do.	Nov. 24th, 1907.
4	12 10 0	4 „ .	Do.	Nov. 24th, 1907.
5	12 10 0	3 „ .	Do.	Nov. 24th, 1907.

* Estimated value.

SPRING CALVERS.

TABLE IA.—Showing value, age, and "history" of cows; also date of Calving.

No. of Cow.	Value at commencement of experiment.	Age at commencement of experiment.	Where obtained.	Date of Calving.
6	£ s. d. 13 0 0	8 years,	Bought locally as incalf cow.	April 26th, 1908.
7	*12 0 0	8 „	Reared on farm,	April 28th, 1908.
8	*12 10 0	6 „	Do.	April 25th, 1908.
9	*12 0 0	5 „	Do.	April 30th, 1908.
10	11 10 0	9 „	Bought locally as incalf cow.	May 1st, 1908.

* Estimated value.

The Winter Calvers were fed indoors until May, with a run on the grass daily. During summer they were only fed on grass.

The Spring Calvers were grazed during summer, and received concentrated foods from July. In winter they were fed on hay and roots with concentrated foods to those giving milk.

As will be seen from tables II. and IIA., each system of Dairying shows a substantial profit. The answers to the questions then are: "Does Winter Dairying pay?" "Yes." "Which is the more profitable: Winter or Summer Dairying?" "Winter."

**Result of
Experiment.**

WINTER CALVERS.

TABLE II.—Showing Income and Expenditure.

INCOME.		EXPENDITURE.			
	£ s. d.		£ s. d.	£ s. d.	£ s. d.
3,848½ gallons new milk at average creamery price of 4'87d. per gallon,	78 0 9	Hay and straw (including litter),	12 10 11½		
3,078½ gallons separated milk at 1d. per gallon,	12 16 6	Roots,	6 1 7		
1 ton of manure per month for each cow at 3s. per ton,	4 10 0	Cake,	6 16 6½		
5 calves at £1 per calf,	5 0 0	Oats,	9 13 5	35 2 6	
		Grazing: 3 acres per cow at 10s. per acre,		7 10 0	
		Carting milk to creamery at 1½d. per gallon,		4 0 2	
		Milking,		5 0 0	
		Attendance,		4 17 0	
		Insurance at 1s. 6d. per cow per month,		4 10 0	
		Depreciation,		5 0 0	
		Interest on capital,		4 10 0	
		Service of cows at 2s. 6d. per cow,		0 12 6	
		* Balance (Profit),		29 5 1	
	£100 7 3			£100 7 3	

* Profit per cow, £5 17s. 0d.

SPRING CALVERS.

TABLE IIA.—Showing Income and Expenditure.

INCOME.			EXPENDITURE.			
	£	s. d.		£	s. d.	£ s. d.
3,413 gallons new milk at average creamery price of 4·68d. per gallon,	66	11 0	Hay and straw (including litter),	13	3 7½	
2,730½ gallons separated milk at 1d. per gallon,	11	6 7	Roots,	4	3 1½	
1 ton of manure per month for each cow at 2s. 4d. per ton, ..	3	10 0	Cake,	5	16 8	
5 calves at £1 per calf,	5	0 0	Oats,	5	1 2	
						28 4 7
			Grazing: 3 acres per cow at 10s. per acre,			7 10 0
			Carting milk to creamery at ½d. per gallon			3 11 1
			Milking,			4 15 0
			Attendance,			4 10 0
			Insurance at 1s. 6d. per cow per month,			4 10 0
			Depreciation,			5 0 0
			Interest on capital,			4 10 0
			Service of cows at 2s. 6d. per cow, ..			0 12 6
			*Balance (Profit),			23 4 5
	£86	7 7				£86 7 7

* Profit per cow, £4 12s. 11d.

When studying tables II. and IIA, it should be remembered that we have not taken Summer Dairying as usually practised in Ireland. From information received from various dairying districts in the South of Ireland, the average period in milk for spring or summer calvers is about 26 weeks, whilst the

**Points to be
Noted.**

average yield is about 450 gallons. Tables III. and IIIA. show, in regard to the experiment dealt with here, the yield of milk per cow, the individual and average number of days in milk, and the average percentage of butter fat. Comparing the spring or summer lot with the average for other districts, as given above, we find that the experimental lot were 14 weeks longer in milk, and gave 232 gallons of milk more, on an average, than the cows of other districts. This high yield was not due to the selection of the cows. Tables I. and IA. give an index to size, quality, etc.; we must, therefore, conclude that the increased yield was mainly due to judicious feeding.

WINTER CALVERS.

TABLE III.—Showing yield of milk (in lbs.) per cow for periods of 4 weeks; total and average milk in gallons; average percentage of butter-fat; and number of days in milk.

Four weeks ended	No. 1 Cow.	No. 2 Cow.	No. 3 Cow.	No. 4 Cow.	No. 5 Cow.	
December 21st, 1907, .	1,001½	794	802½	856½	755½	
January 18th, 1908, .	922½	751½	957	906	719	
February 15th, .. .	927	893	815½	895	702½	
March 14th, .. .	904	968	688½	854	658½	
April 11th, .. .	834½	953½	644	762	608½	
May 9th, .. .	831½	921½	609½	774	558½	
June 6th, .. .	856½	1,005	585½	836½	549½	
July 4th, .. .	839	1,006½	589½	792	498½	
August 1st, .. .	565	895½	524	573	413½	
August 29th, .. .	234	832½	411	454½	271½	
September 26th, .. .	23½	607½	213½	268½	236½	
October 24th, .. .	—	495½	80½	133½	67	
November 21st, .. .	—	418	—	—	—	
Total lbs. of milk, .	7,939	10,542	7,010½	8,107½	6,039	
Total gallons of milk per cow	770½	1,023½	680½	787	586½	
Total No. of days in milk, .	202	365	315	335	331	Av. number of days, 327.
Total milk for lot, .			3,848½	gallons		
Average milk for lot, .			769½	gallons		
Av. percentage butter fat, .			4.03			

*Cow No. 2 remained in milk 414 days, giving in all during the milking period 1,072 gallons of milk.

SPRING CALVERS.

TABLE IIIA.—Showing yield of milk (in lbs.) per cow for periods of 4 weeks; total and average milk in gallons; average percentage of butter-fat, and number of days in milk.

Four weeks ended	No. 6 Cow.	No. 7 Cow.	No. 8 Cow.	No. 9 Cow.	No. 10 Cow.	
May 9th, 1908, .	552½	443½	457	294½	268	
June 6th, .. .	1,226½	1,017½	1,023½	993½	1,167½	
July 4th, .. .	1,282½	1,184½	1,239½	1,153½	1,207½	
August 1st, .. .	1,021½	1,019½	1,011½	929	954½	
August 29th, .. .	908	953½	890½	861½	831	
September 26th, .. .	657	705½	643	673	603½	
October 24th, .. .	478½	560½	453½	546	466	
November 21st, .. .	376½	493½	409½	518½	367½	
December 19th, .. .	85	484½	382½	457½	94½	
January 16th, 1909, .	—	490½	278½	409	—	
February 13th, .. .	—	471	84	308½	—	
March 13th, .. .	—	338	—	206½	—	
April 10th, .. .	—	244½	—	—	—	
Total lbs. of milk, .	6,587	8,407	6,872½	7,311½	5,960	
Total gallons of milk per cow	639½	816½	667	709½	578½	
Total No. of days in milk, .	228	346	289	327	226	Av. number of days, 283.
Total milk for lot, .			3,413	gallons		
Average milk for lot, .			682½	gallons		
Av. percentage butter fat, .			3.48			

An examination of tables III. and IIIA. reveals the remarkable variation existing between cows as milk producers. Cows No. 2 and 5 show a difference in milk yield of 487 gallons, whilst the difference in yield between cows 7 and 10 is 238 gallons. Even allowing for difference in age between Nos. 2 and 5, the variation here shown denotes how necessary it is for the dairy farmer to weigh and "weed." As no creamery was available at Kinsale to which the milk could be sent, it was decided, for the purpose of comparison, etc., to work on the prices received at Lombardstown creamery, to which the milk from a similar experimental lot in East Cork was being delivered. Such a system is open to objection, as the prices were not actually received. Moreover, it is unfair to assume the milk of the winter calvers to be only equal in value to that of the spring calvers, when tables III. and IIIA. show the milk of the former to be richer in butter fat by over half per cent. on an average.

An interesting point in connection with Winter Dairying here claims our attention:—Is it possible to have the same cows calving at or about the same time year after year? Generally speaking, it is quite possible. Tables A and B show the dates of service, and of calving for each lot.

TABLE A.—Showing dates of going to Bull and of Calving—Season, 1908-'09 (Winter Calvers).

Number of Cow.	Went to Bull on	Calved on
1	February 16th, 1908, .	November 20th, 1908.
*2	April 16th, 1908, .	January 14th, 1909.
3	February 22nd, 1908, .	November 26th, 1908.
4	February 15th, 1908, .	November 22nd, 1908.
5	March 27th, 1908, .	} February 15th, 1909.
	April 19th, 1908, .	
	May 8th, 1908, .	

* Milked to January 11th, 1909, i.e., within 3 days of calving.

TABLE B.—Showing dates of going to Bull and of Calving—Season, 1909 (Summer Calvers).

Number of Cow.	Went to Bull on	Calved on
6	June 2nd, 1908, .	March 10th, 1909.
7	July 20th, 1908, .	April 26th, 1909.
8	July 22nd, 1908, .	April 29th, 1909.
9	August 4th, 1908, .	May 9th, 1909.
10	August 14th, 1908, .	May 15th, 1909.

It will be seen from the tables that two of the winter lot calved earlier this season than last, whilst another (No. 3) calved two days later. Nos. 2 and 5 calved later than the previous season, but as No. 2 milked to within a few days of calving, and is giving satisfaction in both quantity and quality of milk this season, it is doubtful if any loss was sustained in her case. As a record is being kept of this season's milk, it will be interesting to note the comparative values of the milk of cows Nos. 1, 3, and 4, and cows Nos. 2 and 5. It may be well to here emphasise the fact that each cow has been charged with her keep from the date of calving one season until the date of calving the following season. Thus, if she calved within the twelve months, she is charged with keep to the date of calving only, and, likewise, if the period between the calvings is fourteen or sixteen months, the keep for that time is charged against the season's milk.

WINTER CALVERS.

TABLE IV.—Showing quantities of food per head at different periods.

From	To	Ration per head per day.			
November 23, 1907,	April 11, 1908,	Hay,	10 lbs.	} With grass.	
		Straw,	12 "		
		Roots,	35 "		
		D.C. cake,	2 "		
		Oats,	5 "		
April 11, 1908,	April 25, 1908,	Straw	8 lbs.	} With grass.	
		Roots,	35 "		
		Cake,	2 "		
		Oats,	5 "		
April 25, 1908,	May 2, 1908,	Cake,	2 lbs.	} With grass.	
		Oats,	2 "		
May 2, 1908,	May 9, 1908,	Cake,	2 lbs.	With grass.	
May 9, 1908,	October 31, 1908,	Good grass.			
October 31, 1908,	Date of Calving,	Fairly good grass with—		} To Cows dry.	} To Cows in milk.
		Hay,	6 lbs.		
		Straw,	4 "		
		Roots,	14 "		
		Cake,	1 "		
		Oats,	1 "		

SPRING CALVERS.

TABLE IVA.—Showing quantities of food per head at different periods.

From	To	Ration per head per day.	
April 25, 1908, .	May 2, 1908, .	Hay, 7 lbs.	} With grass.
		Straw, 8 "	
		Roots, 14 "	
		Cake, 2 "	
		Oats, 3 "	
May 2, 1908. .	May 9, 1908, .	Cake, 2 lbs.	} With grass.
		Oats, 2 "	
May 9, 1908, .	July 31, 1908, .	Grass alone.	
July 31, 1908, .	October 31, 1908,	Cake, 1 lb.	} With grass.
		Oats, 2 lbs.)	
October 31, 1908,.	End of milk; period for each cow.	Hay, 7 lbs.	} With grass.
		Straw, 8 "	
		Roots, 28 "	
		Cake, 2 "	
		Oats, 3 "	
End of milking time	Date of Calving, .	Hay, 10 lbs.	} With grass.
		Straw, 8 "	
		Roots, 14 "	

It may be here remarked that Mr. Wolfe made butter at home, and found a ready market for same in Kinsale at prices ranging from one shilling per lb. in summer to one and fourpence per lb. in winter. The actual profits from this system in the case of both winter and summer calvers were more than those shown from the creamery returns. Though winter and spring calves are valued at the same figure, it is generally accepted that winter-dropped calves are more valuable.

Farmyard manure varies in quality according to food of animals.

For this reason the manure of the summer calvers is only valued at two and fourpence per ton, whilst that of the winter calvers is valued at three shillings per ton. It will be noted that the summer droppings of the cattle are not valued, as an attempt

to place a value on them would only lead to inaccuracies.

Some points may need explanation when considering the expenses side of the balance sheet.

The ten shillings per acre allowed for grazing covers rent, rates, and taxes. Tables IV. and IVA. give details of ration for both lots. The quantity of roots given to the winter cows when in full milk may seem small to some farmers who are dealing with big, roomy cows, requiring eighty or one hundred pounds of roots per day. It must be remembered that the cows in the West Cork experiment were not more than ten cwt. each on an average.

The prices charged for the foods per ton can be seen on referring to tables V. and VA.

WINTER CALVERS.

TABLE V.—Showing food consumed (with grass) and cost of same.

	Weight consumed.				Price per ton.			Total cost.			
	Tons.	Cwts.	St.	lbs.	£	s.	d.		£	s.	d.
Hay, .	3	6	2	0	2	10	0		8	5	7½
Straw, .	4	3	6	10	1	0	0		4	5	4
Roots, .	12	3	1	10	0	10	0		6	1	7
Cake, .	0	15	1	7	9	0	0		6	16	6½
Oats, .	1	15	1	7	5	10	0		9	13	5½
								Total,	£35	2	6½

SPRING CALVERS.

TABLE VA.—Showing food consumed (with grass) and cost of same.

	Weight consumed.				Price per ton.			Total cost.			
	Tons.	Cwts.	St.	lbs.	£	s.	d.		£	s.	d.
Hay, .	4	0	5	7	2	10	0		10	1	6
Straw, .	3	2	1	2	1	0	0		3	2	1½
Roots, .	8	6	2	0	0	10	0		4	3	1½
Cake (D.C.).	0	12	7	10	9	0	0		5	16	8½
Oats, .	0	18	3	0	5	10	0		5	1	2
								Total,	£28	4	7½

These tables also show the total cost of each kind of food per lot. The prices taken are the selling prices at Kinsale. The charge for crushing the oats is included in the cost of labour; this work was done by means of a handcrusher on the farm. The charge for decorticated cotton cake includes cost of "nutting." The charges for milking and attendance are above the average; indeed, the charges are almost at double the rate of the actual cost during the experiment. However, as labour is every year getting scarcer and dearer, the charges, though high, are not excessive.

Depreciation is allowed for at the rate of one pound per cow. A reference to the ages of the cows in the winter lot shows that there is only one cow likely to have depreciated seriously in value, whilst, at least, one cow—No. 5—will have increased in value. Though we have included depreciation in the winter lot, we are of opinion that no depreciation has taken place. In the summer lot the depreciation is, perhaps, not over-estimated. Insurance and interest on capital are items which the ordinary farmer does not take into account. Both are worked out at current rates; the interest on capital is worked not alone on the value of the cows, but also on the value of the "plant"—houses, land, etc., necessary for the carrying out of the experiment.

Tables VI. and VIA. show the weekly yield of milk in gallons, the weekly average butter fat, the value of new and separated milk per week, and the cost of food per week for each lot.

WINTER CALVERS.

TABLE VI.—Showing weekly yield of milk, percentage of butter-fat, weekly value and cost.

Week ended.			Weekly yield in gallons.	Percentage of Butter fat.	Creamery price per gallon.	Weekly Value.	*Food, Weekly Cost.
						£ s. d.	£ s. d.
Nov.	30th,	1907	102	—	4.97	2 8 11½	1 13 3½
Dec.	7th,	"	110	—	5.84	3 0 9	1 13 3½
"	14th,	"	104	3.58	"	2 17 6	1 13 3½
"	21st,	"	101	3.68	"	2 15 10	1 13 3½
"	28th,	"	103½	3.51	"	2 17 2	1 13 3½
Jan.	4th,	1908	101	3.58	5.50	2 13 6	1 13 3½
"	11th,	"	101	3.61	"	2 13 0	1 13 3½
"	18th,	"	101½	3.7	"	2 13 3½	1 12 6½
"	25th,	"	103	3.77	"	2 14 0½	1 12 3½
Feb.	1st,	"	104	3.75	5.67	2 14 4½	1 12 3½
"	8th,	"	102½	3.87	"	2 15 3	1 12 3½
"	15th,	"	102½	3.77	"	2 15 3	1 12 3½
"	22nd,	"	103½	3.77	"	2 15 9	1 12 3½
"	29th,	"	99½	4.12	"	2 15 6½	1 12 3½
Mar.	7th,	"	98½	3.86	4.77	2 5 6	1 12 3½
"	14th,	"	96½	4.11	"	2 4 2½	1 12 3½
"	21st,	"	94	4.05	"	2 3 6	1 12 3½
"	28th,	"	93	4.00	"	2 3 0½	1 12 3½
April	4th,	"	92	3.74	4.22	1 18 5½	1 12 9½
"	11th,	"	91	4.08	"	1 17 10	1 12 9½
"	18th,	"	90	3.89	"	1 17 7	1 4 2½
"	25th,	"	91	3.83	"	1 17 10	1 4 2½
May	2nd,	"	90	3.96	3.91	1 17 6	0 12 1½
"	9th,	"	92	3.94	"	1 15 10½	0 6 4
"	16th,	"	94½	3.69	"	1 16 9½	0 4 6
"	23rd,	"	91	3.89	"	1 15 8	0 4 6
"	30th,	"	93	3.76	"	1 16 2½	0 4 6
June	6th,	"	92½	3.56	4.10	1 17 7½	0 5 6
"	13th,	"	92½	3.53	"	1 17 6	0 6 0
"	20th,	"	92	4.03	"	1 17 8	0 6 6
"	27th,	"	90	3.65	"	1 18 8	0 5 6
July	4th,	"	84	4.06	4.40	1 16 3	0 5 6
"	11th,	"	81	3.79	"	1 15 0	0 5 6
"	18th,	"	77½	3.86	"	1 13 6	0 5 6
"	25th,	"	72	3.96	"	1 11 6	0 5 0
Aug.	1st,	"	65½	3.99	5.00	1 8 5	0 4 10½
"	8th,	"	63½	3.99	"	1 7 3½	0 4 10½
"	15th,	"	58½	3.79	"	1 5 3	0 4 10½
"	22nd,	"	52½	4.24	"	1 2 5	0 4 10½
"	29th,	"	45½	4.25	"	0 19 3	0 4 10½
Sept.	5th,	"	41½	4.31	5.00	0 19 9½	0 4 10½
"	12th,	"	35½	4.90	"	0 16 11	0 4 4½
"	19th,	"	31	5.0	"	0 14 10	0 4 4½
"	26th,	"	26½	4.9	"	0 12 9½	0 4 4½
Oct.	3rd,	"	24	5.0	5.26	0 12 9	0 4 4½
"	10th,	"	22½	5.1	"	0 11 8	0 4 4½
"	17th,	"	19	5.0	"	0 10 2	0 3 10½
"	24th,	"	15	—	"	0 8 0	0 3 10½
"	31st,	"	11½	—	"	0 6 5	0 3 10½
Nov.	7th,	"	10½	—	5.46	0 5 1½	0 8 2½
"	14th,	"	9	—	"	0 4 3	0 8 2½
"	21st,	"	8	—	"	0 3 9½	0 8 2½

*For details of Weekly Cost see Tables IV. and V.

SPRING CALVERS.

TABLE VIA.—Showing weekly yield of milk, percentage of butter-fat, weekly value and cost.

Week ended.			Weekly yield in gallons.	Percentage of Butter fat.	Creamery price per gallon.	Weekly Value.			*Food, Weekly Cost.		
						£	s.	d.	£	s.	d.
May	2nd,	1908	77½	—	3.91	1	10	5	0	15	6
"	9th,	"	118	3.70	"	2	6	3½	0	12	8½
"	16th,	"	119½	3.71	"	2	6	9½	0	4	6
"	23rd,	"	119½	3.74	"	2	6	9	0	4	6
"	30th,	"	139½	3.32	"	2	14	8½	0	4	6
June	6th,	"	149½	3.36	4.10	2	19	0½	0	5	6
"	13th,	"	153½	3.53	"	3	2	9	0	6	0
"	20th,	"	154	3.30	"	3	2	10	0	6	6
"	27th,	"	149	3.75	"	2	19	11	0	5	6
July	4th,	"	131½	3.40	4.40	2	16	10	0	5	6
"	11th,	"	128½	3.24	"	2	16	8½	0	5	6
"	18th,	"	120½	3.14	"	2	12	2½	0	5	6
"	25th,	"	116	3.25	"	2	10	2½	0	5	0
Aug.	1st,	"	115½	2.87	5.00	2	10	0½	0	10	3
"	8th,	"	116½	3.06	"	2	10	5	0	10	3
"	15th,	"	112½	3.10	"	2	8	8	0	10	3
"	22nd,	"	104½	3.14	"	2	5	2½	0	10	3
"	29th,	"	98	3.14	"	2	2	5½	0	10	3
Sept.	5th,	"	87½	3.27	5.00	2	2	1½	0	10	3
"	12th,	"	83	3.63	"	2	0	1½	0	9	9
"	19th,	"	80	3.63	"	1	18	8	0	9	9
"	26th,	"	68	3.77	"	1	12	8½	0	9	9
Oct.	3rd,	"	64½	3.84	5.26	1	11	0½	0	9	9
"	10th,	"	59½	4.10	"	1	10	0½	0	9	3
"	17th,	"	58½	4.04	"	1	9	3½	0	9	3
"	24th,	"	59½	3.88	"	1	9	11½	0	9	3
"	31st,	"	60	3.89	"	1	10	3	0	9	3
Nov.	7th,	"	52½	3.97	5.46	1	7	2	1	3	3½
"	14th,	"	48½	3.68	"	1	5	1½	1	3	3½
"	21st,	"	46½	3.57	"	1	4	4½	1	6	8½
"	28th,	"	40½	3.40	"	1	1	2	1	6	2½
Dec.	5th,	"	35½	3.70	6.63	1	1	8½	1	6	2½
"	12th,	"	37	3.60	"	1	2	5½	1	6	2½
"	19th,	"	31½	3.60	"	0	19	2½	1	1	8
"	26th,	"	29½	3.30	"	0	18	2½	1	1	8
Jan.	2nd,	1909	30	3.40	5.85	0	18	7	1	1	8
"	9th,	"	28	3.30	"	0	15	6	1	1	8
"	16th,	"	25½	3.51	"	0	14	0½	1	1	5
"	23rd,	"	24½	3.40	"	0	13	7½	1	1	2
"	30th,	"	21	3.70	"	0	11	8½	1	1	2
Feb.	6th,	"	19½	3.70	5.7	0	10	7½	0	17	8
"	13th,	"	18½	3.30	"	0	9	9½	0	17	8
"	20th,	"	17½	3.30	"	0	9	3½	0	17	8
"	27th,	"	14½	3.30	"	0	7	10½	0	17	8
Mar.	6th,	"	11½	3.31	5.00	0	5	8	0	14	9½
"	13th,	"	8½	3.15	"	0	4	2½	0	14	9½
"	20th,	"	6½	—	"	0	3	0½	0	14	9½
"	27th,	"	6	—	"	0	2	10½	0	14	9½
April	3rd,	"	6	—	4.22	0	2	10½	0	14	10½
"	10th,	"	5½	—	"	0	2	3½	0	13	2½
"	17th,	"	4½	—	"	0	1	11½	0	13	9½
"	24th,	"	4	—	—	0	1	7½	0	13	9½

*For details of Weekly Cost see Tables IV A. and V A.

The amount of the separated milk can be estimated from the new milk, and calculated at one penny per gallon—this added to the value of the new milk makes up the figures given as "weekly value."

It will be seen that the value of milk covered the cost of food, except during three weeks for the winter calvers, while the cost of food was greater than the value of the milk during twenty-three weeks for the spring calvers.

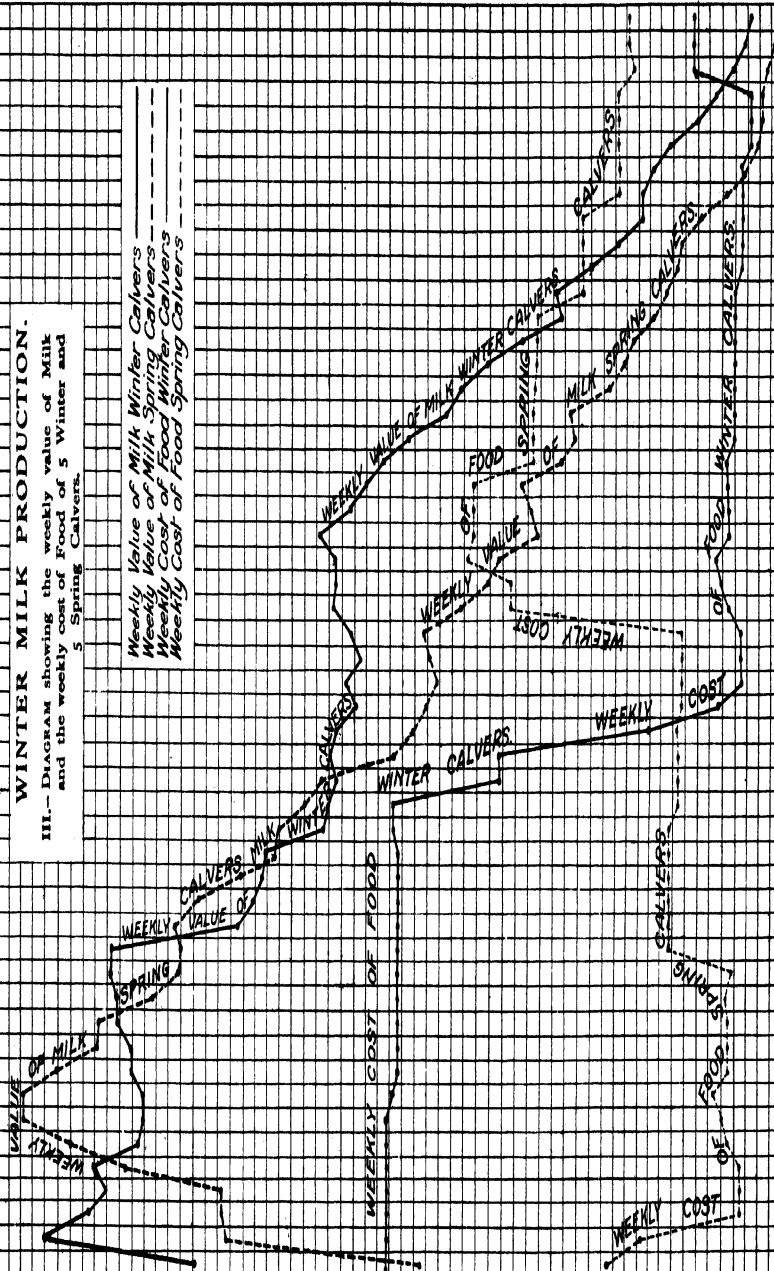
SHILLINGS

WEEKS AFTER CALVING.

WINTER MILK PRODUCTION.

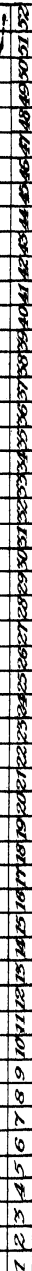
III.— DIAGRAM showing the weekly value of Milk and the weekly cost of Food of 5 Winter and 5 Spring Calvers.

Weekly Value of Milk Winter Calvers
Weekly Value of Milk Spring Calvers
Weekly Cost of Food Winter Calvers
Weekly Cost of Food Spring Calvers



SHILLINGS

WEEKS AFTER CALVING.



WEEKS AFTER CALVING.

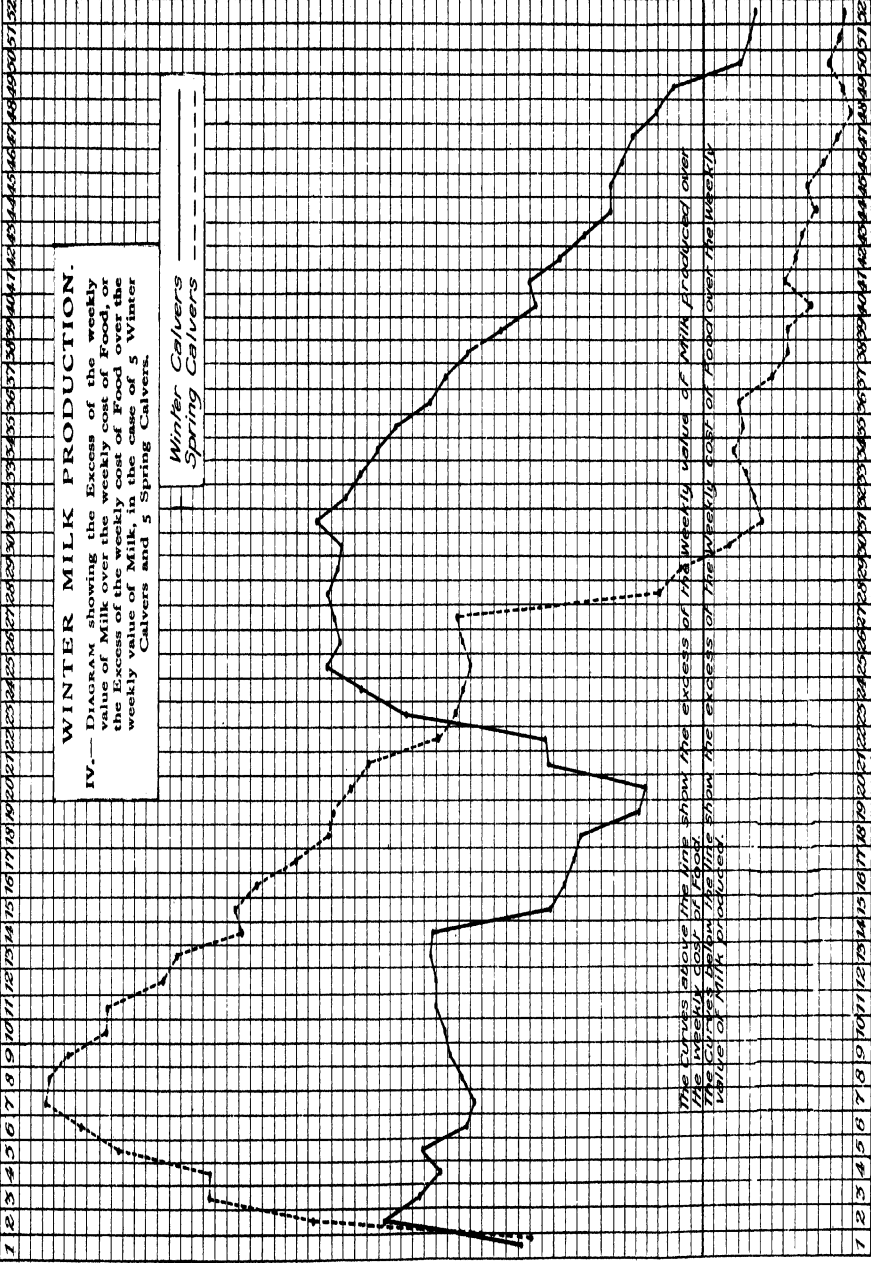
WINTER MILK PRODUCTION.

IV.-- DIAGRAM showing the Excess of the weekly value of Milk over the weekly cost of Food, or the Excess of the weekly cost of Food over the value of Milk, in the case of 5 Winter weekly Calvers and 5 Spring Calvers.

Winter Calvers
Spring Calvers

The curves above the line show the excess of the weekly value of Milk produced over the weekly cost of Food.
The curves below the line show the excess of the weekly cost of Food over the weekly value of Milk produced.

SHILLINGS
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WEEKS AFTER CALVING.

WINTER AND SUMMER CALF REARING.

[*** In connection with the experiments carried out to compare results obtained from Winter and Summer Milk Production (See page 665), two experiments were conducted with the object of demonstrating whether the Winter or Summer Rearing of Calves was the more profitable. Two reports showing the results obtained are printed below.]

I.

CALF-REARING EXPERIMENTS, CONDUCTED ON THE FARM OF MR. C. O'CALLAGHAN, GLANTANE, MALLOW.

By J. M. ADAMS, A.R.C.Sc.I., N.D.A., *Instructor in Agriculture.*

The Dairying experiment, conducted on the farm of Mr. C. O'Callaghan, Scarra, Glantane,* afforded a favourable opportunity for comparing the results shown by an experiment in rearing of calves dropped in November, with the results of an experiment in rearing calves dropped in April.

The calves dealt with were the produce of the two sets of cows included in the dairying experiment. They were fed for a period of a little over twelve months. The foods consumed by each lot of calves were carefully weighed and recorded; the calves were weighed and offered for sale at the local fair (Mallow).

The following table gives details of the quantities and cost of foods consumed by the two lots of calves:—

TABLE I.
NOVEMBER CALVES.

	Gals.	Cwts.	Qrs.	lbs.	Cost.	£	s.	d.
New Milk, . . .	114	—	—	—	6s. 2d. per gal.	2	19	8
Separated Milk, . . .	1,143	—	—	—	1d. per gal.	4	15	3
Calf-meal, . . .	—	3	1	16½	12s. 6d. cwt.,	2	2	6
Linseed Cake, . . .	—	13	1	8½	9s. 6d. „	6	6	6
Crushed Oats, . . .	—	8	3	2½	5s. 6d. „	2	9	4
Hay, . . .	—	13	3	15	2s. 6d. „	1	14	9
Roots, . . .	—	12	2	20	6d. „	0	6	4
Grazing, . . .	—	—	—	—	£1 per calf,	5	0	0
Total, . . .	—	—	—	—		25	14	4

* See p. 665, *et seq.*

APRIL CALVES.

	Gals.	Cwts.	Qrs.	lbs.	Cost.	£ s. d.
New Milk, . . .	143	—	—	—	4·92d. per gal.	2 18 6
Separated Milk, . .	1,165	—	—	—	1d. per gal.,	4 17 1
Calf Meal, . . .	—	2	2	17	12s. 6d. cwt.,	1 13 1
Linseed Cake, . . .	—	12	0	2½	9s. 6d. „	5 14 2
Crushed Oats, . . .	—	6	3	14	5s. 6d. „	1 17 10
Hay, . . .	—	45	2	4	2s. 6d. „	5 13 10
Roots, . . .	—	75	1	12	6d. „	1 17 7
Grazing, . . .					12s. per calf,	3 0 0
					Total, .	27 12 1

The prices charged for new milk include the current prices received from the creamery for the months during which the

Rations and their Cost. calves were given new milk, plus 1d. for separated milk. The calf meal used was that recommended by the Department, viz.:—

- 1 Part Pure Crushed Flax-seed,
- 2 Parts Fine Indian Meal,
- 2 Parts Fine Oatmeal.

This food was prepared by steaming with boiling water; the other foods were given raw.

The November calves were housed up to the beginning of May. Each calf was fed with new milk for one month after being dropped, separated milk was then given, together with a gradually increased allowance of calf meal and hay. When two months' old, a little linseed cake and roots were given in addition. The five calves were put on grass at the 16th May, and continued feeding on separated milk together with an allowance of calf meal and linseed cake. After 12th July, linseed cake only was given—1lb. per head per day. This allowance was increased to 1½lbs. per head from the middle of August until the 24th September. From the latter date until sold at 1st December, 1908, the daily allowance on the grass was 3lbs. crushed oats and 1lb. linseed cake per head. The April calves were similarly fed, and were put on grass at the same date as the November lot. They were given separated milk up to the end of November. From the beginning of June they received linseed cake in gradually increasing quantity. The calf meal was lessened after September, and crushed oats were given instead. During November the calves were housed on severe nights, and got an allowance of hay. After November the calf meal was omitted altogether; the calves were housed, and were given an allowance of roots, hay and cake until offered for sale on the 4th May, 1909.

Table II. gives particulars of the age, weight, when sold or offered for sale, average daily increase in weight, and average cost of each lb. increase in live weight for the two sets of calves:—

**Some
Results.**

TABLE II.
NOVEMBER CALVES.

No.	Number of days old when sold.	Live weight on 1st December, 1908.			Price sold for.	Average daily increase in live weight.	Average cost of each lb. increase in live weight.
	Days.	Cwts.	Qrs.	lbs.	£ s. d.	lbs.	Pence.
1	387	5	3	12	7 8 0	1.53	2.15
2	386	5	1	22	7 8 0	1.41	2.31
3	379	5	2	13	7 8 0	1.49	2.20
4	375	5	0	16	7 8 0	1.36	2.40
5	362	5	1	15	7 8 0	1.48	2.19

APRIL CALVES.

No.	Number of days old when sold, or offered for sale.	Live weight on 4th May, 1909.			Price sold for or offered.	Average daily increase in live weight.	Average cost of each lb. increase in live weight.
	Days.	Cwts.	Qrs.	lbs.	£ s. d.	lbs.	Pence.
6	401	3	3	20	6 10 0	.93	3.60
7	400	4	2	20	6 10 0	1.15	2.94
8	395	3	3	20	6 10 0	.95	3.55
9	387	4	0	0	6 10 0	.96	3.40
10	384	4	0	1	6 10 0	1.00	3.37

The November calves were sold in one lot for £37 0s. 0d. The April calves were offered in one lot on the 4th May, at the local fair, but only Nos. 7 and 9 were sold; these two calves fetched £13. No. 6 was subsequently privately sold for £8 as a bull for stock purposes, and as Nos. 8 and 10 were hardly as good calves as the two sold at £13, the whole lot have been valued at £6 10s. each.

The weighing of the ten calves when dropped was, unfortunately, overlooked, but in order to arrive at the daily increase in weight, and the cost of each lb. of increase, the weight of the calves when born was taken at an average of 65lbs. each.

Table III. shows the income and expenditure in the case of each lot of calves:—

TABLE III.
NOVEMBER CALVES.

INCOME.				EXPENDITURE.			
	£	s.	d.		£	s.	d.
5 calves at £7 8s. 0d.,	37	0	0	5 calves at 24s.,	6	0	0
				New milk,	2	19	8
				Separated milk,	4	15	3
				Calf-meal, cake, and oats,	10	18	4
				Hay,	1	14	0
				Roots,	0	6	4
				Grazing at £1 per calf,	5	0	0
				Attendance,	2	10	0
				Insurance and interest on capital,	0	10	0
				Balance for profit,	2	5	8
	£37	0	0		£37	0	0

APRIL CALVES.

INCOME.				EXPENDITURE.			
	£	s.	d.		£	s.	d.
5 calves at £6 10s. 0d.,	32	10	0	5 calves at 24s.,	6	0	0
				New milk,	2	18	6
				Separated milk,	4	17	1
				Calf-meal, cake, and oats,	9	5	1
				Hay,	5	13	10
				Roots,	1	17	7
				Grazing at 12s. per calf,	3	0	0
				Attendance,	2	10	0
				Insurance and interest on capital,	0	10	0
Balance for loss,	4	2	1		£36	12	1
	£36	12	1				

The amount charged for attendance is put down at the same figure in the case of both lots. The November calves had to be housed and hand-fed during the winter of 1907-08, but the April calves had also to be house-fed for as long a period during the winter of 1908-9.

An increased charge of £2 is put down for grazing the November calves, as the calves in this lot were 4 months' older than the April calves when put on grass. The higher cost in the keep of the April calves was due to the large quantity of hay consumed; they also consumed more roots, but less calf meal, cake, and crushed oats than the winter lot.

From the time of calving till they were sold, the winter calves continued to be more thrifty and better growers than the April lot, with the result that though fed for a slightly shorter period they weighed on an average over $1\frac{1}{2}$ cwt. more per head than the average weight per head of the April calves. The figures in each case were:—

	Average live weight. cwt. qr. lbs.	Average Number of days old.
November calves	. 5 1 27	378 days.
April calves	. 4 0 12	393 „

There can be no question that the time of calving has a considerable influence on success or otherwise in calf-rearing. Farmers who are in the habit of timing their cows to drop their calves in winter or early spring are well aware of this, and have found by experience that early calves are easier reared and better thrivers than late calves. In the result of the test under discussion, the remarkable difference between a profit of 9s. 2d. per head, in favour of November calves, and a loss of over 16s. per head against the April calves, confirms this opinion.

Calf rearers, when considering the prices received for their calves, frequently overlook charges for attendance, insurance, and interest on capital. The attendance is usually done by the farmer's wife or daughters, but is a factor which must be considered. Even if these charges are omitted, there is still a comparative loss on the April calves. This lot has also an advantage in comparing results, in that the value put down for them works out at a higher price per cwt., live weight, than that received for the November calves.

A matter of interest in this test is with respect to the value which separated milk works out at, for feeding winter and spring calves respectively.

On referring to Table III., November calves, and omitting the value put down for separated milk, the balance left for profit would be £7 0s. 11d. This sum would permit of putting a value of almost $1\frac{1}{2}$ d. per gallon on separated milk for feeding winter calves. In the case of the April calves, again referring to Table III., and omitting separated milk, the balance left for profit would be 15s. 0d., which is equivalent to a value of about $\frac{1}{8}$ d. per gallon for feeding April calves.

In other words, separated milk was nine times more valuable for feeding the November calves than for feeding the April calves.

Taken in conjunction with the results obtained from the winter milkers in the dairying experiment, conducted simultaneously with this calf-rearing test, it is evident that Winter Dairying and Winter Calf-rearing will pay. The greater profits obtained both from the winter milkers and the winter calves speak for themselves.

**Winter Calf-
Rearing a
Success.**

II.

CALF-REARING EXPERIMENTS CONDUCTED ON THE FARM OF MR. W. WOLFE, KINSALE.

By W. F. PRENDERGAST, A.R.C.Sc.I., *Instructor in Agriculture.*

In Ireland the rearing of calves is looked upon as being a necessary adjunct to Dairying. The age at which the calf is disposed of varies according to the system of farming pursued: Where "dairies" or dairy herds are sub-let the calves are usually sold within six months of birth, but in general the more common practice is to sell the animal when about 12 months' old.

The question naturally arises in connection with Winter Dairying: What are the comparative merits of Winter and Summer reared calves? In other words: will it pay the farmer better to rear calves in Winter than in Summer?

A ready means of testing this matter was provided by the Dairying experiments conducted on the farm of Mr. W. Wolfe, Kinsale, Cork.* The progeny of the Winter and Summer calving cows in the experiments were fed for almost 12 months, and a careful account of the food consumed was kept. Four calves from each lot were sold when 12 months' old at Kinsale Market, the two remaining were valued on the farm.

**The Method of
the Experi-
ment.**

As stated in the article on Winter Milk Production, four of the Winter cows were bought at local fairs. The calves from those cows were inferior in quality, and two of them were poor thrivers. The produce of one of the Summer cows bought locally was also inferior. But making due allowance for individual variations, the results of the Calf-rearing test are instructive and interesting.

*See p. 682, *et seq.*

Tables 1 and 1A. show the receipts and expenditure for each lot:—

TABLE 1.—Showing Income and Expenditure for Winter Calves.

INCOME.			EXPENDITURE.		
	£	s. d.		£	s. d.
4 calves sold at £5 5s. 0d. per head,	21	0 0	Value of calves at birth,	5	0 0
1 calf valued at £6 5s. 0d.,	6	5 0	New milk,	4	2 1
			Separated milk,	3	7 1
			Meal mixture,	4	17 4
			Hay,	1	13 9
			Roots,	0	2 4
			Grazing, $\frac{1}{2}$ acre per calf at 10s. per		
			acre,	1	17 6
			Attendance,	2	10 0
			Insurance and interest on capital, ..	0	10 0
			*Balance (profit),	3	4 11
	£27	5 0		£27	5 0

*Equal to Profit per head of £0 12s. 11½d.

TABLE 1A.—Showing Income and Expenditure for Summer Calves.

INCOME.			EXPENDITURE.		
	£	s. d.		£	s. d.
4 calves sold at £5 2s. 6d.,	20	10 0	Value of calves at birth,	5	0 0
1 calf valued at £6 5s. 0d.,	6	5 0	New milk,	4	12 3
			Separated milk,	2	19 4
			Meal mixture,	2	19 6
			Hay,	6	2 6
			Roots,	1	4 6
			Grazing, $\frac{1}{2}$ acre per calf, at 10s. per		
			acre,	1	5 0
			Attendance,	2	10 0
			Insurance and interest on capital, ..	0	10 0
*Balance (Loss),	0	8 1			
	£27	3 1		£27	3 1

*Average Loss, £0 1s. 7½d.

The Winter-reared calves show a profit of £3 4s. 11d. or of almost 13s. per head, whilst the Summer calves were

General reared at a loss of 8s. 1d., or about 1s. 7d. per
Result. head. Though this result in itself is important, it
is only when taken in conjunction with the results

from the Dairying experiment that its full significance is seen. Moreover, an important factor remains to be considered, viz.: the calf mortality in Winter and Summer. We have been able to obtain

**Mortality of
Winter and
Summer
Calves.**

some actual figures in connection with this matter, and those summarised would show that the average death-rate for the South of Ireland would be:

Winter Reared Calves 0.5 per hundred.
Summer „ „ 9.0 „ „

Easily reared, good thrivers, and, equally important, an animal able to make use of the summer's grass, the Winter calf is a safe investment. Table II. and IIA. show the quantities of food consumed.

TABLE II.—Showing Total Food Consumed, with Price of same, and Total Cost of Food for Winter Calves.

	Gals.	Cwts.	Qrs.	lbs.	Cost.	£ s. d.
New Milk, . .	157½	—	—	—	6·28d per gal.	4 2 1
Separated Milk, .	805	—	—	—	1d. „	3 7 1
Meal Mixture, .	—	10	1	3	9s. 6d. cwt.	4 17 4
Hay, . . .	—	13	2	0	2s. 6d. „	1 13 9
Roots, . . .	—	4	3	0	0s. 6d. „	0 2 4
Grazing, . .	—	—	—	—	½ acre per head 10s. per acre	1 17 6
					Total, .	£16 0 1

TABLE IIA.—Showing Total Weight and Cost of Food consumed, together with Cost Price of Food for Summer Calves.

	Gals.	Cwts.	Qrs.	lbs.	Cost.	£ s. d.
New Milk, . .	225	—	—	—	4·92d. per gal.	4 12 3
Separated milk, .	712	—	—	—	1d. „	2 19 4
Meal Mixture, .	—	6	1	2	9s. 6d. per cwt	2 19 6
Hay, . . .	—	49	0	0	2s. 6d. „	6 2 6
Roots, . . .	—	49	0	4	0s. 6d. „	1 4 6
Grazing, . .	—	—	—	—	½ acre per head 10s. per acre,	1 5 0
					Total, .	£19 3 1

The Winter dropped calves were given new milk for three weeks after birth, when they were gradually changed to separated milk and a meal mixture. The mixture used was:—

- 1 Part Pure Crushed Flax-seed.
- 2 Parts Wheat Meal.

The meal mixture was gradually increased from ½lb. per head per day in January to 2lbs. per head per day in April. Hay and a few

roots were given from January to May. The calves were housed until the middle of April, when they were put out to grass, and on 1st May both separated milk and the meal was discontinued. From May until sold in November the calves received grass only; towards the end of summer they were changed on to good aftergrass.

The Summer calves got new milk for a month after birth. They received separated milk and a meal mixture made up as for the Winter lot, together with grass, until 31st August, when they were changed to good aftergrass alone until 15th November. From 15th November to the date of sale in April, the animals got 7lbs. roots and 7lbs. hay per head per day, together with a run on the grass. They were housed on bad nights only.

Referring to tables I. and IA., it will be seen that ten shillings per head is allowed for attendance; and a small charge is also made for insurance and interest on capital. Labour is dearer in some districts than in others; by substituting local prices the results can be applied to any part of Ireland.

Winter Dairying pays, and so does the Winter Rearing of calves. Summer Dairying, where carried out subject to a proper system of feeding, undoubtedly pays also. It should be carefully borne in mind, however, that Summer Dairying to pay requires more than a large yield of milk—it is necessary to have a good demand for the milk. Thus Winter Dairying, whilst being profitable in itself, helps to make Summer Dairying profitable also, for it is now generally recognised that until Irish traders can produce an all-the-year-around supply of butter, the Irish butter trade—which is, unfortunately, a summer trade—must suffer severely. What has been done by Mr. Wolfe is surely possible elsewhere.

WINTER EGG RECORDS.

In the issues of the Department's *Journal*, Vol. VIII., No. 4, and Vol. IX., Nos. 1 and 3, articles appeared pointing out the need and use of egg records. It is not intended here to further deal with the general question, but only to bring out prominently one or two points of importance, more particularly with reference to winter egg production.

In the article in the *Journal*, Vol. IX., No. 3, it was shown that it is not the hen that shows the highest annual egg yield that it always the most profitable, as much depends upon the period of the year when eggs are produced. A moderate annual yield with a high rate of production when prices are good may be more profitable than a larger yield, if the greater yield is obtained at a time when prices are less remunerative. In view of this fact, and with the intention of putting the matter clearly before poultry keepers, it has been determined to publish the appended tables showing the results obtained in the six months, October, 1908, to March, 1909.

In the article already referred to, it was pointed out that general purpose breeds held their own fairly well with the laying breed in the first quarter of the year 1908, and gave the best results in the last quarter of that year. The tables appended will show that a very similar result has been experienced in the first three months of 1909. Indeed, the outstanding fact of the present tables is that the general purpose breeds during the winter six months—that is, when eggs are scarce and dear—gave more satisfactory results than the laying breeds. Thus, Buff Orpingtons with a general average of 54.5 eggs per bird, White Orpingtons with a general average of 50.7 eggs per bird, White Wyandottes with an average of 56.6 eggs per bird, Faverolles with an average of 42.5 eggs per bird, and Houdans with an average of 59.2 eggs per bird, contrast very favourably with the results shown by White Leghorns with an average of 44.8 eggs per bird, Brown Leghorns with an average of 40.7 eggs per bird, and Black Minorcas with an average of 32.8 eggs per bird. White Wyandottes and Buff Orpingtons, in particular, showed good results as winter layers. Full details with regard to the results of the best

flocks and the worst flocks, and as to the laying of the various breeds, can be seen in the following table, and in the tables appended:—

Breed.	Average of all the flocks.	Average of best flock.	Average of worst flock.
White Leghorns, . .	44.3	86.9	26.1
Brown Leghorns, . .	40.7	62.8	30.7
Black Minorcas, . .	32.8	50.3	22.9
Buff Orpingtons, . .	54.5	79.3	36.8
White Orpingtons, . .	50.7	59.1	41.9
White Wyandottes, . .	56.6	81.5	25.2
Faverolles,	42.5	63.3	22.0
Barred Plymouth Rocks, .	35.9	72.3	13.9
Houdans,	59.2	59.2	59.2
Light Sussex,	31.7	32.2	31.7
Mixed Pure Breeds, . .	39.7	39.7	39.7
Mixed Flocks,	40.8	74.1	19.3

As in previous returns, the outstanding fact brought out by these winter records is the great importance of strain. Indeed, it may be looked upon as clearly proved that strain is, in the matter of egg production, considerably more important than breed, for, whilst the general averages of the various breeds are not very markedly different, there are very great variations indeed between the results shown by the best laying strains and the worst laying strains. Thus, we have the best flock of White Leghorns—and it shows the best result of any flock—giving an average result of 86.9 eggs per bird, whilst the least successful flock of White Leghorns had as low an average as 26.1 eggs per bird. Again, while Buff Orpingtons showed a general average of 54.5 eggs per bird, the best flock gave an average result of 79.3 eggs per bird, and the worst flock showed an average of 36.8 eggs per bird; White Wyandottes, with a general average of 56.6 eggs per bird, had a flock with the excellent average of 81.5 eggs per bird, whilst the lowest flock of this breed had an average of only 25.2 eggs per bird. Faverolles, with a general average of 42.5 eggs per bird, had a best result of 63.3 eggs per bird, and a worst result of 22.0 eggs per bird. Barred Plymouth Rocks, with an all-round average of 35.9 eggs per bird, yet had a best flock showing an average of 72.3 eggs per bird, but the worst flock of Barred Plymouth Rocks had the very low average of 13.9 eggs per bird. In the case of

mixed flocks, where the general average was 40.8, one flock had the high average of 74.1 eggs per bird. The lowest average was 19.3 eggs per bird.

It is not intended to claim that all the differences in these figures are wholly due to strain, although the fact that such great variations occurred in all the breeds shows that strain is the predominant cause of difference. It must be granted that in many cases not a little of the difference in results may be due to causes other than strain, as, for instance, the ages of birds, method of housing, food supply, the climate of the district, and general treatment of the flocks and birds. Still the figures bring out very prominently the question of strain.

The Department is anxious that all farmers and others should be interested in these egg records, and they are desirous that poultry keepers should, in addition to the ordinary records, which are already being kept for the Department, keep further special records of the weight of eggs, the number of eggs laid by hens, number of eggs laid by pullets, the prices received, the estimated cost of keep per bird per week, the kind of food used, the comparative return shown by birds on free range as contrasted with that shown by birds kept in confined runs, the breeds that do specially well in certain districts, and, in general, all points of interest relating to the management of flocks.

As will be seen from the attached tables, a considerable number of egg records are being kept already in Ireland, but it is very desirable that the number should be greatly increased.

The Department, therefore, wish to know of farmers and other poultry keepers who are willing to keep careful records of their egg yields. Many farmers will not be able to keep returns in the full and detailed manner referred to above, but every return is valuable and will be welcomed. An egg record book in which returns can be kept will be sent post free to all applicants. Applications, which need not be stamped, should be addressed to

THE SECRETARY,

**Department of Agriculture and
Technical Instruction for Ireland,**

**Upper Merrion Street,
Dublin.**

EGG-RECORD—WINTER, 1908-09.

SUMMARY TABLE.

Name of Breed.	October.		November.		December.		January.		February.		March.		Total of Monthly Averages.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1 White Leghorns,	369	3.5	330	4.3	334	4.3	303	6.3	341	9.9	349	16.0	44.3
2 Brown Leghorns,	129	3.5	129	2.7	143	3.5	108	5.1	108	11.6	104	14.3	40.7
3 Black Minorcas,	245	3.6	241	2.7	267	3.4	231	4.4	197	8.5	197	10.2	32.8
4 Buff Orpingtons,	231	5.0	254	4.1	276	7.1	227	10.6	227	13.4	243	14.3	54.5
5 White Orpingtons,	45	7.0	46	3.5	60	5.7	60	9.6	60	11.6	60	13.3	50.7
6 White Wyandottes,	216	4.3	232	4.8	236	7.4	191	11.0	193	13.3	193	15.8	56.6
7 Faverolles,	247	3.9	235	3.0	229	4.0	227	6.0	225	10.2	227	15.4	42.5
8 Barred Plymouth Rocks,	327	4.0	347	3.5	361	3.8	308	4.6	300	7.1	303	12.9	35.9
9 Houdans,	31	4.0	30	5.9	33	6.0	25	6.5	25	12.5	25	22.3	59.2
10 Light Sussex,	25	5.1	24	1.9	26	3.3	31	2.9	60	6.9	60	11.5	31.6
11 Mixed Pure Breeds,	237	7.0	227	4.4	244	7.1	100	2.7	100	5.3	100	13.2	39.7
12 Mixed Flocks,	3204	4.3	3040	3.4	3246	3.8	2645	5.8	2504	9.3	2489	14.2	40.8
Totals,	5306	4.3	5135	3.5	5455	4.3	4456	6.1	4340	9.8	4350	14.3	42.3

WHITE LEGHORNS.

No.	October.		November.		December.		January.		February.		March.		Total of Monthly Averages.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1	30	1.6	25	1.2	28	2.5	28	3.5	30	11.0	30	13.8	33.8
2	55	4.6	35	2.1	35	5.2	35	11.8	35	14.7	35	19.2	57.6
3	55	3.8	55	1.3	55	1.3	30	5.0	55	2.0	55	12.7	26.1
4	30	4.5	30	3.2	35	5.0	36	5.0	36	10.8	36	18.4	46.9
5	36	5.7	24	12.3	30	4.0	30	6.4	30	13.6	30	18.5	60.5
6	30	0.1	30	0.3	30	1.6	30	1.2	30	8.0	30	15.3	26.5
7	36	0.1	36	0.8	36	3.0	30	7.0	32	10.3	35	11.0	32.2
8	38	7.7	36	20.4	36	15.8	36	13.0	36	13.8	36	16.2	86.9
9	32	1.2	32	0.2	32	0.5	32	1.3	36	7.6	36	19.2	30.0
10	20	6.5	20	3.7	10	9.8	10	6.3	15	15.1	20	18.0	59.4
11	7	0.0	7	1.7	7	2.0	6	6.1	6	11.6	6	16.1	37.5
Total,	369	3.5	330	4.3	334	4.3	303	6.3	341	9.9	349	16.0	44.3

BROWN LEGHORNS.

No.	October.		November.		December.		January.		February.		March.		Total of Monthly Averages
	Number of Hens	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1	42	5.0	42	5.2	41	6.3	-	-	-	-	-	-	-
2	21	0.0	21	0.7	21	2.9	28	4.2	28	11.3	26	13.9	33.0
3	30	7.0	30	1.4	30	3.3	28	7.0	28	12.3	27	18.0	49.0
4	30	0.0	30	1.0	45	1.2	46	4.4	46	11.4	45	12.7	30.7
5	6	6.2	6	7.0	6	5.3	6	10.4	6	14.1	6	19.8	62.8
Total,	129	3.5	129	2.7	143	3.5	108	5.1	108	11.6	104	14.3	40.7

BLACK MINORCAS.

1	45	2.8	30	2.9	30	0.0	30	0.3	30	6.2	30	10.7	22.9
2	30	9.6	30	3.6	30	4.2	30	7.8	30	8.4	30	11.0	44.6
3	28	0.8	28	0.0	28	0.0	28	0.4	-	-	-	-	-
4	34	1.3	34	2.3	35	3.7	35	4.6	35	6.8	35	5.6	24.3
5	30	2.8	31	4.5	53	5.8	45	7.2	40	12.0	40	18.0	50.3
6	22	2.0	22	1.6	22	0.6	22	4.3	24	4.3	24	10.6	23.4
7	20	0.0	30	1.5	33	4.2	35	4.7	32	11.6	32	7.0	29.0
8	30	9.0	30	4.4	30	5.6	-	-	-	-	-	-	-
9	6	0.0	6	2.7	6	4.7	6	8.5	6	6.3	6	19.7	41.9
Total,	245	3.6	241	2.7	267	3.4	231	4.4	197	8.5	197	10.2	32.8

BUFF ORPINGTONS.

1	15	13.1	25	6.0	25	8.0	25	6.4	25	7.0	25	9.3	49.8
2	24	4.3	40	1.0	55	2.9	16	10.0	16	21.0	31	12.2	51.4
3	31	4.2	27	5.3	27	10.9	27	13.1	27	15.3	27	18.0	66.8
4	36	4.5	36	5.1	36	13.1	36	11.3	36	13.1	36	18.1	65.2
5	31	2.1	31	1.9	30	7.5	30	10.8	30	13.2	30	10.8	46.3
6	30	1.8	30	3.0	30	3.7	30	10.0	30	12.0	30	14.3	44.8
7	20	1.8	30	2.2	35	6.9	35	8.6	35	13.6	35	14.4	47.5
8	36	10.5	27	9.8	27	7.6	20	16.8	20	17.8	20	16.8	79.3
9	8	2.7	8	3.0	11	6.0	8	7.0	8	7.3	9	10.8	36.8
Total,	231	5.0	254	4.1	276	7.1	227	10.6	227	13.4	243	14.3	54.5

WHITE ORPINGTONS.

1	30	8.0	31	2.8	30	4.4	30	11.5	30	14.4	30	18.0	59.1
2	15	4.8	15	5.0	30	7.0	30	7.6	30	8.8	30	8.7	41.9
Total,	45	7.0	46	3.5	60	5.7	60	9.6	60	11.6	60	13.3	50.7

WHITE WYANDOTTES.

No.	October.		November.		December.		January.		February.		March.		Total of Monthly Averages.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1	24	10.5	24	4.6	25	7.6	24	10.8	25	9.0	25	16.2	58.7
2	45	2.2	45	0.0	45	0.0	45	3.2	46	7.9	46	11.9	25.2
3	28	0.7	40	3.0	40	5.0	42	10.7	42	10.8	42	14.0	44.2
4	21	0.7	21	6.2	21	5.0	—	—	—	—	—	—	—
5	50	4.2	50	9.3	50	16.2	50	18.6	50	19.8	50	18.4	81.5
6	30	4.7	30	4.3	30	7.2	30	11.0	30	14.1	30	20.0	61.3
7	18	10.7	22	6.0	25	10.8	—	—	—	—	—	—	—
Total,	216	4.3	232	4.8	236	7.4	191	11.0	193	13.3	193	15.8	56.6

FAVEROLLES.

1	30	3.0	30	3.2	30	3.3	30	4.8	29	8.8	30	7.4	30.5
2	20	6.1	20	6.8	20	9.7	20	9.2	20	10.6	20	20.9	63.3
3	10	0.0	10	1.4	10	10.3	17	13.2	16	13.8	16	16.9	55.6
4	22	9.0	22	6.1	22	6.0	22	7.4	22	10.7	22	19.7	58.9
5	35	1.6	35	0.0	35	2.3	35	3.1	35	8.0	35	15.5	30.5
6	20	0.0	20	0.0	25	0.0	23	1.0	24	6.3	24	14.7	22.0
7	30	3.3	30	3.0	20	10.1	20	9.4	20	13.4	20	17.6	56.8
8	44	4.6	32	2.2	31	2.0	30	3.6	29	12.7	30	18.3	43.4
9	6	5.8	6	0.0	6	0.0	—	—	—	—	—	—	—
10	30	6.3	30	5.4	30	1.2	30	6.5	30	10.3	30	13.0	42.7
Total,	247	3.9	235	3.0	229	4.0	227	6.0	225	10.2	227	15.4	42.5

BARRED PLYMOUTH ROCKS.

1	30	1.4	33	2.4	35	3.0	33	3.1	30	5.6	30	14.2	29.7
2	30	8.3	30	1.0	30	3.0	30	5.6	30	7.4	30	15.0	42.7
3	30	1.0	30	3.2	30	5.3	30	4.4	30	7.2	30	11.3	32.4
4	18	5.3	18	3.9	11	9.4	27	13.0	27	16.4	27	24.3	72.3
5	55	1.1	55	0.6	55	0.4	55	0.1	55	1.1	55	10.6	13.9
6	20	3.9	24	0.6	40	1.5	36	4.5	34	7.1	34	9.1	26.7
7	30	2.8	30	4.9	33	6.0	32	4.9	30	5.6	33	9.0	33.2
8	22	0.0	31	0.6	31	2.3	29	3.3	28	4.4	28	4.7	15.3
9	50	8.7	60	7.0	60	7.5	—	—	—	—	—	—	—
10	6	7.3	6	2.0	6	0.0	6	8.0	6	12.5	6	21.0	50.8
11	36	4.8	32	9.3	30	4.4	30	6.9	30	16.8	30	21.2	63.4
Total,	327	4.0	347	3.5	361	3.8	308	4.6	300	7.1	303	12.9	35.9

HOUDANS.

1	9	2.8	8	2.1	8	5.2	—	—	—	—	—	—	—
2	22	4.4	22	7.3	25	6.2	25	6.5	25	12.5	25	22.3	59.2
Total,	31	4.0	30	5.9	33	6.0	25	6.5	25	12.5	25	22.3	59.2

LIGHT SUSSEX.

No.	October.		November.		December.		January.		February.		March.		Total of Monthly Averages.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
1	15	5.5	12	2.8	12	3.6	10	2.6	40	6.3	40	11.4	32.2
2	10	4.7	12	1.0	14	3.1	21	3.0	20	8.0	20	11.9	31.7
Total,	25	5.1	24	1.9	26	3.3	31	2.9	60	6.9	60	11.6	31.7

MIXED PURE BREEDS.

Total,	237	7.0	227	4.4	244	7.1	100	2.7	100	5.3	100	13.2	39.7
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MIXED FLOCKS.

1	5	1.4	50	2.1	50	2.2	50	7.1	50	10.2	45	17.4	40.4
2	24	6.2	24	2.8	21	2.2	20	4.0	20	10.0	20	13.9	39.1
3	95	7.5	70	8.8	70	8.0	76	8.0	85	14.6	76	7.7	54.6
4	40	6.0	40	3.0	48	1.8	50	3.4	50	10.1	50	15.3	39.6
5	140	1.5	137	1.4	139	2.3	137	4.4	135	8.8	135	11.6	30.0
6	35	0.0	5	1.4	8	11.6	21	5.9	18	13.3	18	23.3	55.5
7	60	2.9	66	1.6	69	1.4	69	4.4	69	5.2	69	13.5	29.0
8	28	2.0	27	0.1	30	1.2	30	2.3	30	2.8	30	16.4	24.8
9	55	2.1	55	2.0	55	0.8	-	-	-	-	-	-	-
10	22	4.3	22	2.1	24	2.8	-	-	-	-	-	-	-
11	49	6.4	45	8.0	51	7.0	44	7.6	44	6.9	44	19.4	55.3
12	53	2.5	35	1.3	35	2.7	59	10.3	50	12.6	58	13.6	43.0
13	90	2.5	29	2.6	90	4.5	90	5.1	90	7.5	90	13.9	36.1
14	40	5.1	65	3.1	55	2.3	55	5.0	55	7.4	55	16.1	39.0
15	106	3.1	86	2.0	86	2.6	78	3.7	78	8.5	78	13.3	33.2
16	115	4.0	108	1.2	111	2.1	109	5.1	115	9.4	106	13.6	35.4
17	60	5.0	60	2.0	60	6.6	60	7.4	60	9.5	40	18.7	49.2
18	60	6.7	80	2.7	80	4.3	-	-	-	-	-	-	-
19	82	5.3	82	4.6	86	5.0	79	8.7	58	23.0	74	23.4	70.0
20	60	5.4	60	3.4	80	3.1	80	2.9	70	5.7	50	12.0	32.5
21	130	5.3	130	5.3	130	5.6	120	6.7	110	10.8	110	12.2	45.9
22	45	10.8	44	6.2	43	4.9	60	6.2	70	10.1	70	12.4	50.6
23	60	7.1	60	4.1	60	3.2	80	2.7	70	9.3	59	16.8	43.2
24	40	5.0	40	1.2	79	2.0	43	4.8	44	8.0	43	9.7	30.7
25	40	6.0	40	4.0	60	3.8	-	-	-	-	-	-	-
26	60	2.1	65	1.6	65	2.2	70	6.1	85	9.4	100	9.1	30.5
27	26	5.0	26	3.8	26	3.1	32	4.0	31	6.0	28	16.6	38.5
28	36	2.5	42	2.3	42	3.4	40	6.0	40	9.8	40	15.1	39.1
29	51	5.2	50	5.3	50	10.7	51	11.1	51	18.5	51	20.1	70.9
30	45	2.5	45	0.7	45	0.4	45	16.0	45	5.1	45	12.3	37.0
31	94	5.6	94	2.3	94	4.8	94	6.5	94	10.2	90	19.6	49.0
32	53	9.7	52	10.8	51	6.6	51	5.7	74	5.9	64	14.5	53.2
33	34	7.0	34	4.8	40	6.2	39	3.4	38	6.5	38	9.8	37.7
34	65	9.1	65	8.6	70	6.0	65	10.8	57	12.2	88	11.1	57.8
35	45	2.2	45	1.3	56	1.1	-	-	-	-	-	-	-

MIXED FLOCKS—*continued.*

No.	October.		November.		December.		January.		February.		March.		Total of Monthly Averages.
	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	Number of Hens.	Average Number of Eggs laid per Hen.	
36	77	1.0	74	0.4	72	0.6	72	2.1	72	4.6	72	10.6	19.3
37	24	4.2	24	3.0	24	1.5	24	7.5	23	11.0	25	10.6	37.8
38	100	1.4	100	1.1	100	1.4	—	—	—	—	—	—	—
39	30	4.1	29	9.3	32	9.9	34	9.2	36	11.9	38	14.9	59.3
40	60	1.6	60	3.6	60	5.3	—	—	—	—	—	—	—
41	15	8.0	17	7.3	25	9.4	24	17.0	24	14.7	24	17.7	74.1
42	35	3.5	35	0.3	35	2.8	35	5.5	34	14.0	36	14.1	40.2
43	36	3.2	36	0.7	35	1.1	35	2.6	35	5.6	35	12.5	25.7
44	130	4.5	110	4.3	110	4.5	—	—	—	—	—	—	—
45	136	5.3	100	2.6	130	4.0	148	6.3	—	—	—	—	—
46	35	5.4	38	3.4	38	3.8	—	—	—	—	—	—	—
47	150	2.1	150	1.3	140	1.9	130	2.4	130	7.6	130	12.9	28.2
48	58	1.8	63	2.7	60	7.0	60	6.8	58	11.5	60	12.6	42.4
49	100	7.5	100	4.5	100	4.1	100	5.9	100	7.1	100	13.6	42.7
50	36	2.9	36	4.5	36	5.1	—	—	—	—	—	—	—
51	44	8.5	40	5.7	40	4.9	40	4.0	60	7.0	60	13.1	43.2
52	50	1.2	50	1.4	50	3.8	46	2.0	46	7.0	45	14.2	29.6
Total,	3204	4.3	3040	3.4	3246	3.8	2645	5.8	2504	9.3	2489	14.2	40.8

NORTHLANDS SCHOOL OF HOUSEWIFERY, LONDONDERRY.

(In connection with Victoria High School.)

Several years ago the Department, acting with the concurrence of the Board of Technical Instruction, decided to establish two schools for providing courses of instruction in Housewifery. The objects in view were different to those which underlie the other types of housewifery schools working under the Department. The object of the two proposed schools was to provide for girls, who had already received a good general education of secondary type, sound courses of instruction in housewifery extending over a period of, say, one year. It was regarded as essential, to secure good results, that such instruction should be given in a residential school. It was decided to start one of these schools in the North and the other in the South of Ireland, and after some negotiation the nuns of the Ursuline Convent of Waterford undertook the school for the South, and this has been working with much success for about four years. The Department, in looking for a favourable opportunity in the North, invited the co-operation of the Principals of the Victoria High School, Londonderry. This school has already for some years been teaching science under the Department's programme, and the vigorous and successful manner in which this had been organised appeared to promise success in the proposed experiment.

The difficulties in the way of assimilating into a general education for girls some systematic instruction in the management of a house are greater than might have been anticipated. Education clings to traditional methods and tends to conform to conventional ideals, and in such a matter it is necessary that supply should, to some extent, precede demand.

In order to carry out the work and to realise the objects of the Department, it became necessary to build and equip the school as an ordinary dwellinghouse where the actual conditions of home life would be daily met.

The objects of the school were stated by Mr. George Fletcher, the Assistant Secretary of the Department in respect of Technical Education, at the opening of the school on 13th October last. He said:—
“ It might be useful to state something of the aims which the Department had in view in establishing that school. The Department had

NORTHLANDS SCHOOL OF HOUSEWIFERY, LONDONDERRY.

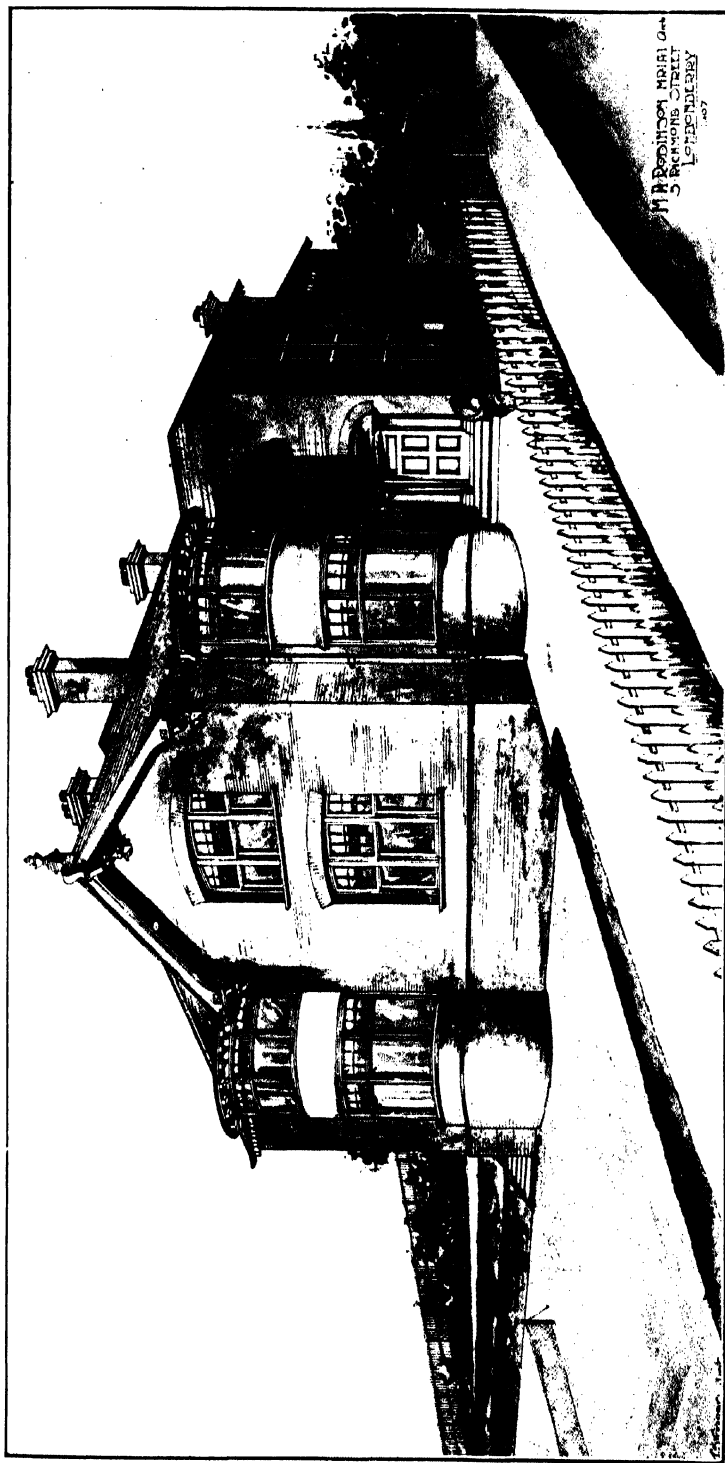


Fig. 1.—Exterior of the School.

**NORTHLANDS SCHOOL OF HOUSEWIFERY,
LONDONDERRY.**



Fig. 2.—The Entrance Hall.

NORTLANDS SCHOOL OF HOUSEWIFERY, LONDONDERRY.



Fig. 3.—The Drawingroom.

fully realised the great importance of the teaching of domestic economy, and those present were probably aware that the Department had now in all parts of the country itinerant teachers of domestic economy, who carried out courses of instruction both in and far from centres of population. The Department

The Objects of the School.

were in that way reaching parts of the country which it would be impossible to reach by any other means, and were thus enabled to provide training for the duties of home life for many thousands of girls every year. That work, it was hoped, would be further extended and consolidated. The necessity for providing a higher type of instruction in household management for girls who had already received a good general education was, however, recognised. He need not argue at length the necessity for such training, or plead that it was not incompatible with the highest refinement or culture. His own firm belief was that an education which stopped short of fitting the recipients for the active duties of their daily life was an imperfect and incomplete education, and one that would not secure the blessings which it was the aim of a good education to secure. Let them glance for a moment at the social significance of that question. The family was the social unit. The future of the nation was decided in the home. Without wishing to appear pessimistic he must express the fear that for reasons which he could not stay to analyse family life had somewhat deteriorated during the last few decades, and that deterioration, unless checked, could only have one result—that of national deterioration. The modern social scheme, so far as the organisation of the average home was concerned, was far from satisfactory. Was there anyone who had had to do with household management who did not recognise that the problem of domestic service was at the present time a most difficult one. He did not propose to deal with that further than to say that the solution of it was retarded by the ignorance of both mistress and servant. So long as domestic service was regarded as menial, and as not requiring careful preparatory training, the service would be perfunctory and inefficient. So long as mistresses looked upon ordinary household duties as a thing unworthy of serious attention, or so long as she herself remained in ignorance of that most difficult business, she must not be surprised to find mismanagement and discomfort within her household, or to discover on the part of servants a want of sympathy or loyalty. It had been said with some show of reason that the proper place for such training was the home itself, and let them hope it would come to be; but if it were necessary for girls to receive their education away

from home in a residential school, that education should be made to include this most important and necessary branch of knowledge. Again, it was said that when a girl became mistress of a home of her own she would readily learn to fit herself for the duties of its management. That, he thought, a wholly mistaken view. . . . The putting off of this kind of training until the time when comfort and happiness were dependent upon it was at least an experiment fraught with much danger. A further argument that might be used in support of that form of instruction was that if treated properly it might be made into a very real educational agent. Household management was an art to which all sciences contributed, and which in its practice involved a very fine manual, and even mental, training. The programme of the school included, in addition to some literary work and all the subjects which entered into the management of a house, a course of instruction in home hygiene and home nursing. For such teaching to realise its best intentions it should be carried on under the actual conditions of a home, and that was why the Department had equipped that house, which approximated as closely as might be to the actual conditions met with in home life, and they believed the course of training to be carried out by Miss Helen Norris, under the direction of the Misses MacKillip, following, as it did, a general education of a secondary type, would enormously benefit those who received it, and would go some little way to meet what was to-day a very real need."

The full syllabus has been worked out during the past year, and none of the students, who have conscientiously worked through the Diploma Course, need fear to undertake the management of a home.

The curriculum includes instruction in Plain, Household, and High Class Cookery, Laundrywork, Housewifery, Household Sewing and Simple Dressmaking, Simple Upholstery, and practice in the daily management and work of the house.

The number of hours per week devoted to class instruction in each subject is:—

Cookery	...	...	...	...	6 hours.
Laundrywork	...	...	...	...	2 hours.
Needlework, Dressmaking, Upholstery, etc.	...	...	...	...	4 hours.
Housewifery	...	...	...	...	3½ hours.
Preparation of Notes and extra Needlework	...	...	...	...	1½ hours.

17½ hours.

NORTHLANDS SCHOOL OF HOUSEWIFERY, LONDONDERRY.



Fig. 4.—The Diningroom.

NORTHLANDS SCHOOL OF HOUSEWIFERY, LONDONDERRY.



Fig. 5.—A Bedroom.

In addition to the practical work done during class instruction, the students in rotation undertake the following daily household duties :—

Cleaning of rooms and staircases, kitchen, range, and stoves.

Preparation of Kitchen and Laundry for classes, Marketing, etc.

Preparation of Meals.

The course at Northlands, as will be seen, is somewhat unique in that it combines the daily, continuous work of a real household, including the unexpected and troublesome matters which of necessity arise, with the formal class lessons in all household subjects. None but experts will know the difficulty of this combination, and experts will readily acknowledge that, without it, there is not likely to be reliable training in the difficult work of house-management. The formal lessons in Northlands have included a thorough course in plain and household cookery, and a fair amount of high-class cookery—enough for the wants of any lady who wishes occasionally to have high-class dishes, and whose *menage* does not include a high-class cook, a course of laundry lessons, a course of housewifery lessons. Each student has cut and made for herself a cloth skirt and a blouse; each has done some household upholstery, such as a small mattress, a curtain, a chair cover, and the needlework portion of the course finished up with a set of lessons on the principles of millinery.

For the informal or practical management, the foundation was laid at the beginning of the course by the lessons in housewifery, and the test was given at the end by making each student responsible for a given time for the entire management of the house. She was criticised on every matter from the decoration of the dinner-table to the state of the dust-bin. She had to plan beforehand all the meals, to organize the maids' work, and, above all, she had to show the exact expenditure for the week, including servants' wages, gas, coal, etc., and the highest commendation was given to the student who combined in her plans the maximum of comfort with the minimum of expenditure.

Northlands is a pleasant house standing alone in its own piece of ground, which contains a tennis court and small lawn, surrounded by a hedge, a screen which promises one day to be gay with creeping plants.

The School and its Situation. It is situated in Crawford Square, on the elevated and open ground on which Victoria High School stands. Almost all its rooms command beautiful views; the fine circular window in the front of the house takes in the sweep of the

Foyle below, and the circle of the Donegal Hills, which are folded round the north-western side of Derry.

The various rooms in the house are all airy, light and pleasant, as may be judged from the accompanying plates. The kitchen especially is most cheerful—plenty of light everywhere in the scullery and laundry, and in the spacious work-room. There are bed-rooms for two students, tastefully furnished, as are the dining-room and drawing-room. The house has been furnished by the Department, and Miss MacKillip, in choosing, had an eye to what was in good taste within the inevitable financial limits, but she hopes, as time goes on, that means will somehow be found by students and friends to add the little ornaments and “knick-knacks” which are the finishing touches of the house beautiful.

The Diploma Course of Northlands is sufficiently exhaustive for a girl to devote her entire time to it with due regard to recreation and fair leisure, but it is so arranged that a student may (by leaving out some of the subjects of housewifery proper) pursue some subject of Art or Literature.

There is also a combined course by which girls may proceed with their ordinary education at Victoria High School.

The lines are laid in pleasant places for a resident student at Northlands, and the year spent there will, without doubt, affect the well-being of the households over which the students may one day hold sway.

NORTHLANDS SCHOOL OF HOUSEWIFERY, LONDONDERRY.

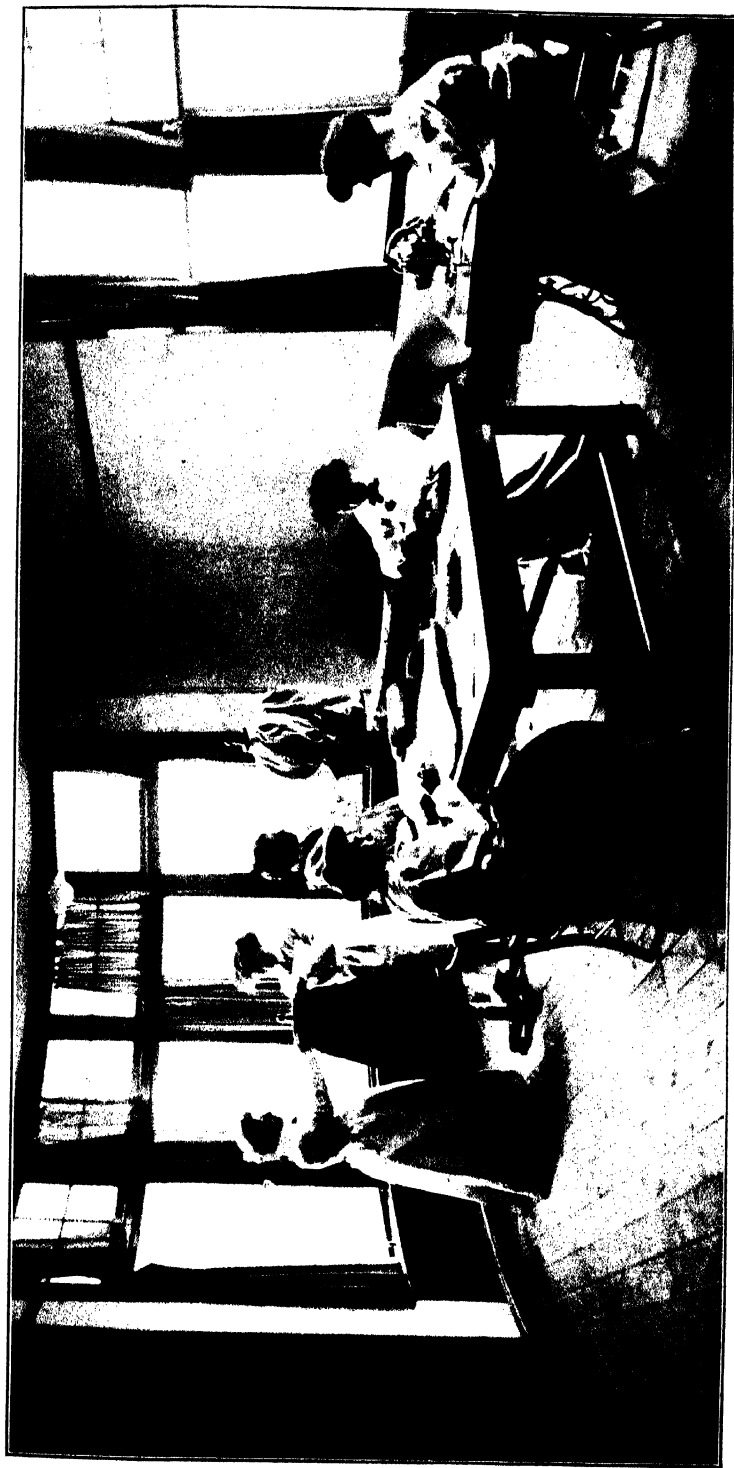


Fig 6.—A Class-room.

NORTHLANDS SCHOOL OF HOUSEWIFERY, LONDONDERRY.

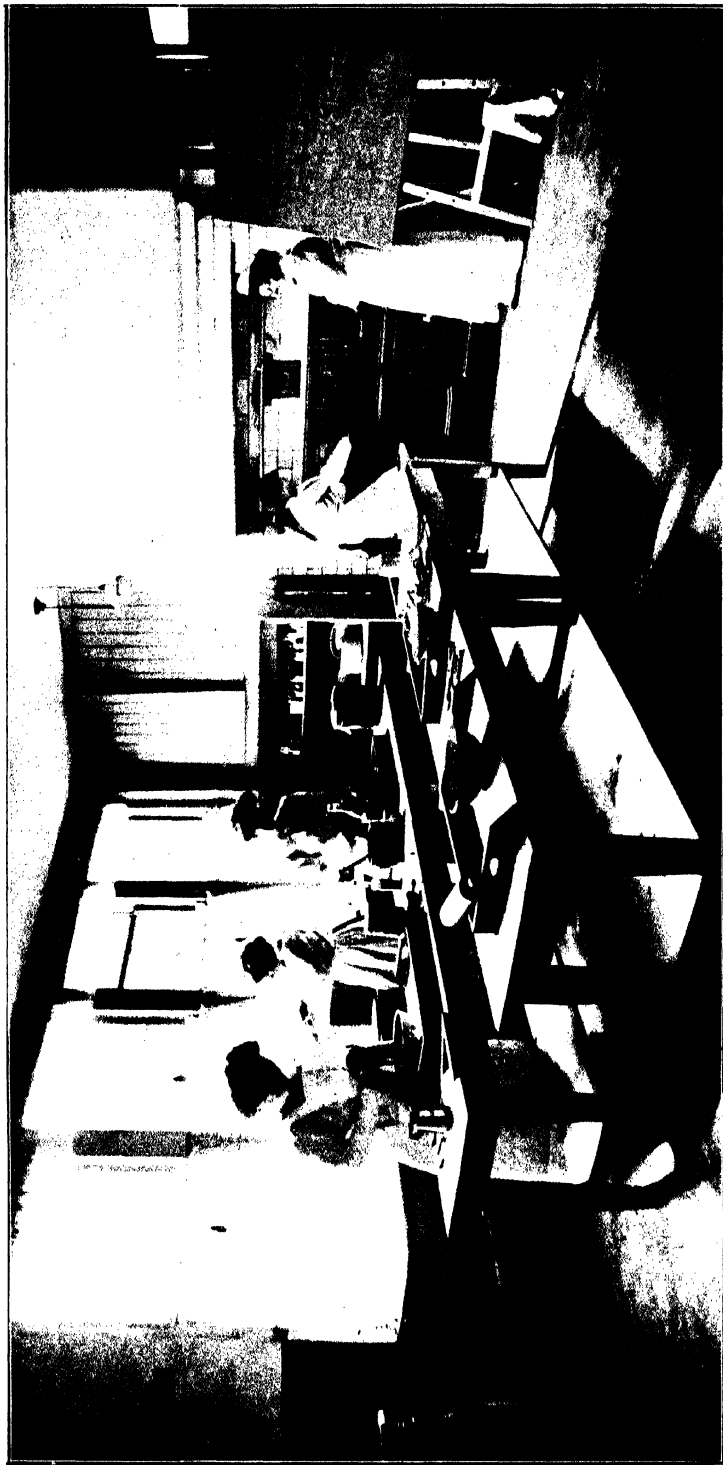


Fig. 7.—The Kitchen.

CROP REPORT, No. 2.—MID-JULY, 1909.

The progress of the crops since the publication of Report No. 1, at 1st June, has been favourable on the whole. The break in the dry weather, which occurred about 23rd May, did not persist long into June; early in the month a continuation of the dry conditions again set in, and was not checked by rain until the 20th ult. As in May the prevailing temperature kept abnormally low for the season, and there was a marked absence of customary summer warmth; even so late as the first week of the month slight night frosts were experienced in the low-lying parts of the midland counties, and the occurrence of hail showers in mid-summer week furnished additional evidence of the low air temperature prevailing. Notwithstanding, the break in the drought about 20th June, the month was, on the whole, dry, there being fourteen days on which no rain fell. The total rain-fall for the month amounted to 1.902 inches, but the mean temperature (Dublin district) only reached 53.5° F. compared with 55.22° F. for the same period last year. The rain-fall for the first six months of this year, and for the same period of 1908, in the Dublin district, was as follows:—

The Weather in June.

	1908.	1909.
	Inches.	Inches.
January,	2.32	1.389
February,	1.817	.678
March,	2.124	2.945
April,	2.256	3.671
May,	1.788	1.123
June,	1.404	1.902

The mean temperature in the same district for the five weeks beginning 31st May and ending 4th July were:—

	1908.	1909.
Week ending June 5,	54.4° F.	53.2° F.
„ „ June 12,	53.6 „	50.1 „
„ „ June 19,	51.4 „	55.9 „
„ „ June 26,	55.9 „	52.7 „
„ „ July 3,	60.8 „	55.6 „

The mean temperature thus fell from late May till near the middle of June, when the warmest day of the month (Tuesday, 15th June—

maximum temperature, 67.9°) occurred. A period of low temperature again succeeded, but this gradually rose towards the end of the month, until the highest temperature of the year (maximum, 71.1° F. and 71.2° F.) was reached on Friday and Saturday, 2nd and 3rd July, respectively. The coldness of the early spring months and the low comparative temperature which prevailed even up till the close of June have caused all crops to be less forward in growth than at this stage in other years; several correspondents estimate that all farm crops are from 10 to 14 days later than in a normal season.

The following are the leading facts mentioned in the reports regarding the progress, condition, and prospects of the individual crops:—

The prospects of the wheat crop are generally encouraging. As a rule winter sown wheat has made most progress;
Wheat. spring sown wheat does not appear to be so thick and healthy nor so forward in growth, and in some cases the crop sown at this period failed entirely. Rust has been more noticeable in white than in red varieties, which are reported as practically immune. The crop has now come into ear, and at the present stage would be much benefited by heat.

The oat crop, which suffered a severe check from the cold parching winds of the May drought, has recovered greatly
Oats. as the result of recent rains; it is now, with few exceptions, described as looking healthy and making rapid growth. A good yield of grain is anticipated, but there is a widespread opinion that straw will be short.

Barley is said to promise well; in common with other cereals the straw is likely to be short, but given favourable
Barley. weather until harvesting, a good sample of grain is expected. The early sown fields are stated to carry thicker and better crops than those which were not sown until later. The absence of heavy rains up to the present has prevented any loss to the crop from lodging.

The rye crop is very sparingly cultivated. Being mainly sown on damp, moory soils, it was enabled to withstand the
Rye. droughts of May and June successfully, and now looks well and promises average yields.

Beans and peas are stated to be thinner and later than in other seasons. The former crop is at present in full bloom, and growers, both in Co. Antrim and in Co. Wexford, regard it as well up to the average. The haulms are stated to be short owing to the dry season. Up to the present there has been no appearance of aphid attack.

The condition of the potato crop is well spoken of from all parts of the country. Owing to weather causes, which delayed planting, and did not encourage growth when planting was done, the crop is, on the whole, a fortnight later than usual. Early planted fields have shown best results to date. There has been a widespread failure of sets in fields which were not planted until the dry weather in May; hence, such fields are very irregular and patchy. There is a general testimony from correspondents in favour of the boxing system. As a result of the backwardness of the crop and the low temperature still prevailing there is little appearance yet of blight setting in, although spraying has been generally begun.

[For further particulars on the prevalence of Potato Blight up till the 17th July, see Special Report at page 745.]

The mangel crop is described as backward and uneven; drought caused germination to be slow and irregular; subsequently night frosts burnt the young plants severely, and in some districts much damage was done from mangel-fly attack. A large area has now been singled and the recent rains and increased warmth have improved growth appearances considerably. The advent of heat and sunshine would be of incalculable benefit to this important root crop.

Turnips, although backward, are healthy, and thinning of the crop is now general. Early sowings are much in advance in some districts; in other districts, the middle sowings (12th May to 30th May) have done best. Many late sowings were destroyed by drought, night frosts, and fly attack, and re-sowing was rendered necessary. Those fields that have been thinned out are reported as growing rapidly since the recent rains and warmer air conditions set in.

The outlook for the flax crop at the present stage is not favourable. The crop is generally spoken of as variable

Flax. and irregular. Early sowings on dry warm soils appear to have succeeded best, but there are many bad fields. Lack of rain has checked growth much, and the crop is very short for this period. The late rains have improved appearances considerably, but at present it is difficult to state whether the yields will be up to average.

First and second crop hay is everywhere described as light, the deficiency being estimated by many correspondents as one-third; a feature of the crop has been the lack

Hay and

Pasture.

of clover, which appears to have failed owing to the nature of the winter and spring weather. Cutting, which was much delayed owing to broken weather, has begun in most counties and a considerable quantity is already reported to have been saved in good order. In the grass seed-growing counties much of the rye-grass crop, owing to its exceeding lightness this year, has been allowed to grow out for the purpose of earing the seed. Old meadows with a longer period of growth appear to be thickening well, and are expected to give close to average yields. Pastures remained very bare up till the middle of June, but the rains which occurred then and the rise in temperature since have produced a great improvement. The luxuriant growth of white clover in pastures this season is especially commented upon by correspondents from several counties.

The following summary indicates the character of the reports received from the various counties:—

Leinster.

Wheat, winter sown, good; spring sown, in many cases thin and patchy. Oats, healthy, but will be short in straw

Co. Carlow. owing to the harsh weather in May. Barley promises to be a fine crop; the straw is heavy and standing well. The potato crop could not be looking better, and is doing well. There are complaints of sets missing in some cases. Mangels are backward for the time of year, and are not getting enough heat. Turnips are going on well, some are being singled; fly attack noticeable in some fields; crop late as a rule. Cabbage a good crop. First crop hay light; cutting delayed owing to showery weather; very little saved yet. Old meadows are improving. Pastures still remain bare, but somewhat helped by the recent rains. Stock are thriving well.

Wheat crop in general good; a few fields rusted. Oats lighter than usual, and straw rather short. Barley good,
Co. Dublin. but backward; improving considerably of late.

Potatoes good; in Skerries district earlies were in some cases earlier than usual; in others, later; yields variable; main crop varieties are looking well, but late; some fields patchy through seed failing. Mangels generally backward unless in specially favoured spots. Early sown turnips backward; later sowings coming on very well. Cabbages doing excellently. Carrots backward. Parsnips good. First crop hay making up very light; a considerable quantity cut and got up in good order. Old meadows lighter than average. Pastures very deficient and have not recovered yet. Live stock have thriven badly compared with other years.

Wheat looks well; some fields failed during winter; parts of the crop badly affected with rust. Oats promise well

Co. Kildare. on manured ground; backward and wants heat; on the whole a light crop. Barley good on manured ground; patchy and uneven on lea ground; early sown fields best, but needs sunshine; some smut showing. Rye very good where sown. The bulk of the potato crop looks well, though there are some poor fields to be seen. Mangels are bad; a large area missed; many fields killed off with the late frost; crop, as a whole, never seems to have recovered from the severe weather of May; wants heat badly. Turnips late, but growing well now; thinning general. First and second crop hay very light; much of the clover appears to have been killed out during the winter and spring; especially light where grazed late with sheep. Some old meadows average where treated well; others will cut a very light crop. Pasture much improved lately. Live stock not fully recovered from the severity of the spring. Cattle both fat and stores, selling well; sheep, a depressing trade.

Wheat, where early sown, doing well; late sown, not so good; promises to be a very fair crop. Oats much

Co. Kilkenny. improved by rain, but the straw will be short. Barley looking well and coming into ear; the straw will not be so long as last year; may turn out an average good crop. Potatoes rather late, but doing well. Mangels backward on the whole, due to late sowing and the cold weather. Turnips making good progress; some fields had to be re-sown owing to fly attack; thinning of the earlier-sown fields now in full swing. First crop hay now being cut; is a light crop, and will be one third under the average. Old meadows backward, but much improved by recent

rain. Pasture has done well during June. Prices for beef and forward store cattle are good.

Wheat, both winter and spring varieties, are looking well. Early sown oats coming into ear and looking well; some fields suffered from wire-worm; straw, on the whole, is likely to be short. Barley late, and few fields yet in ear; given a warm, dry July promises to be a good crop. Rye—the little sown on low ground looks healthy. Potatoes, where early planted, were badly injured by May frosts; on the whole, the crop gives no ground for complaint. Mangels are thinned out in many cases, and are fairly good. Turnips improving very much since the recent rains; thinning commenced; plants look healthy; some fields backward. Cabbages and carrots doing well. First crop hay generally light; cutting has been commenced, now general; much allowed to be over-ripe through wet weather delaying the cutting. Old meadows improving, but will not be a full crop. Pastures bare, but improved by late rains. Stock doing well; store cattle cheaper; sheep very low in price; dairy cows now milking well.

Wheat promises a thin crop, due to failure in germination. On manured land oats look well; in most cases shot

Co. Longford. out; on lea and poor land, the crop will be light. Rye looks well, as it was unaffected by the drought.

Potatoes are very promising; some fields are gappy. Mangels in general, backward; early sowings are the best; frost did much harm to some fields. Turnips are healthy-looking, but backward; suffered considerably from fly attack. First and second-crop hay being cut; is very light. Old meadows have improved well for the past two weeks; will not be ready for cutting until near August. Pasture kept very bare till mid-June, now well covered. Stock are doing well and no complaints of disease.

Wheat, good; white varieties show more rust than red. Oats, where early sown, are in ear; the crop will be fair;

Co. Louth. straw short, but grain yield may be up to average. Barley, very thin in appearance; is well headed;

will likely make a good sample. Potatoes, good in some districts; rather late. Mangels will be all round a poor crop. Turnips, very fair, and have come on splendidly since the rain came; were much kept back by the drought and fly attack. Carrots look to be a poor crop. First-crop hay is light, owing to drought and the failure of clover. Old meadows will yield under average, but much improved by rain. Pasture very backward and bare; has improved lately.

Cattle have kept thin, and lambs are backward. Sheep selling poorly; best ewes, 36s.; lambs, 20s. to 33s.

Wheat promises well; winter sown best; white varieties suffered from rust; red almost free. Oats thinner than in other years; straw will be short; a good yield of grain expected. Barley has a good prospect. Potatoes looking the best of any farm crop; considerable misses in some fields owing to continuous rain in April; sprouted plots are keeping the lead. Mangels, except in a few districts, are backward, and will be a very poor crop; coming very unevenly. Turnips, where early sown, are well forward, and some thinned; late sowings backward; some amount of "fly" attack. Cabbage doing well for the last month. First and second-crop hay cutting very light; no sole whatsoever; yield will probably be a third less than last year. Slight improvement in old meadows; yields will be less than last year. Pasture very bare in many localities; good on a few choice pieces of land. Stock on good land doing surprisingly well; elsewhere badly; not so forward as at this time other years. Fat cattle selling well; sheep thriving well, but prices low; lambs down 10s. per head from last year.

Wheat looks good, and has eared out nicely. Oats well out in ear, and promises a fine crop. Barley at a critical point; just shooting into ear; is in a condition that it could be much injured by heavy rain; would require sunshine to become a good crop. Potatoes looking to be a fair crop; rather late for the time of year. Mangels doing well since being thinned. Turnips about to be thinned, and looking healthy; some which failed early had to be re-sown. First-crop hay has been mostly cut, and, in some cases, made into tramp cocks; will be light in yield. Old meadows expected to cut out better. Pasture bare, but now getting good through rain. Stock healthy, and fat cattle paying well for their keep; sheep are not doing any good.

Wheat a fair crop. Oats at present promise to be a very good crop, except on sandy soils; straw will, however, be short. Barley fair; not as good as usual. Rye good. Potatoes are likely to turn out well; some complaints of sets having missed; the crop backward in places. Mangels are patchy and uneven, due to lack of rain in May and the early part of June. Turnips a fair crop, but suffered much from lack of rain; are now doing well; "fly" not so bad as usual. Other green crops, such as cabbages and rape, are fair, but, like mangels,

suffered from too much drought. First-crop hay will be 50 per cent. less than average; old meadows are backward, and will be disappointingly light. Pastures bare, but improving. Fat cattle are selling well. Beef scarce and dear. Sheep a very bad trade, and heavy mutton scarcely saleable; wool brought a good price.

Wheat looks well at present; nearly all shot out. Winter oats are good, though straw shorter than usual; spring

Co. Wexford. varieties look well, except on poor land, where the crop did not fully recover from the bad weather in May. Barley sown early looks well in general; later sown is poor and backward; straw will not be heavy, but the grain may bulk well. Beans are medium, but improving. Potatoes are doing well; early planted suffered from the drought in June; the tops are small at 1st July. Mangels uneven, and growing slowly; require more heat. Turnips braided well in general; a large area had to be re-sown through adverse conditions of soil. Cabbage doing well. First and second-crop hay will be much below the average of past years; a considerable quantity cut and saved. Old meadows expected to give better yields. Pastures poor, as a rule. Sheep selling badly, but pork keeps a record price.

Wheat much improved recently, and now shooting into ear. Oats look fairly well; on some manured ground will be

Co. Wicklow. short. Barley, the little grown looks promising. Potatoes have done remarkably well. Mangels are backward, but look healthy now; rather uneven in some districts. Turnips are late, but did not suffer so much from "fly" attack as usual; considerable second-sowing was necessary. Cabbages not good. First-crop hay cutting very light; yield much below the average. Old meadows are growing well now. Pastures have been very bare, but much improved lately; white clover seems to be more abundant this year than usual. Live stock have done well for past three weeks. With the exception of good lambs, sheep are still remarkably cheap; big and heavy sheep are practically unsaleable.

Munster.

Wheat fairly good, and free from rust. Oats improving after the recent rains; straw will be short. Barley looks an

Co. Clare. average crop. Rye doing fairly well where sown on moory land. Potatoes looking well, but were checked much by late frosts; sprouted fields still hold the advantage. Mangels backward, and have made very poor progress since

sown until the last ten days; rather behind last year's average. Cabbage good. The hay crop will be very deficient this season, especially on light limestone land; some fields have already been well saved; old "corcas" meadows were never so poor and backward; not a half crop; very little bottom grass in them. Pastures are very bare, and cattle thin. Sheep making no profit. Pigs and bonhams selling well.

Wheat good on the drier soils, and should be an average crop.

Oats are very promising; on lea and poor tillage land the straw is short. Barley is remarkably good. Potatoes generally very good and healthy looking; those planted late are backward and patchy owing to the sets failing. Mangels are just being thinned; crop backward for the season. Turnips were in a bad state from "fly" attack until the rain came; now the plants have started into vigorous growth. Cabbage fairly good. Flax in the growing districts of West Cork looks very healthy and good. First-crop hay will give a poor yield; old meadows promise better. Pasture looks well now, but was very bare until June. White clover appears to be more plentiful than usual this year. Live stock have done fairly well, but are not yet fully recovered from the hardships of May; beef cattle are selling well, and so are pigs; sheep are yielding no profit; dairy cows, except on good deep pasture lands, are not milking well.

The small area of wheat grown looks well, and promises to give a good yield. The oat crop has improved much since

Co. Kerry. the beginning of June; early sown fields are now in ear; on cold damp land the crop is backward. Barley very promising, and will yield well if good weather continues for the present month. Potatoes not so forward as last year owing to the frosts in May; on dry suitable land will be an excellent crop. Mangels, being sown late, are backward, and were much checked by the cold weather; some fields very gappy. Turnips very promising; little injury from the "fly"; late sowings are backward. Cabbage not so good as usual owing to the dry weather. First crop meadows are, as a rule, cutting very light; old meadows may give a fair yield. Pasture bare for the season; improving slowly now. Store cattle moving slowly; beef cattle selling well. Mutton has improved a little. Fat pigs have not been so dear for some years.

Wheat eared well and will be a good crop. Oats doing well lately, especially on lea lands; crop, in general, short.

Co. Limerick. Barley just earing; a little short in straw, but promises well. Potatoes have done well of late; are now in first class order; in some districts the yield will be poor owing to failure of sets. Mangels promise to be good, though backward; thinning just being done. Turnips healthy, some fields being thinned; have escaped the "fly" well. Cabbage growing satisfactorily. First crop hay cut and saved in good condition; on the whole, will be rather under-average crop. Old meadows improving; will be later in cutting than usual; crop will be lighter than in other years. Pasture has done well since 1st June, and stock have now plenty of keep. Fat and young cattle are bringing good prices in fairs. Dairy cows milking fairly well and generally in good condition. Sheep and lambs down considerably in price; a poor trade in fairs.

Wheat very promising; now in full ear. Oats doing well in moist places; in some late districts the straw is short;

Co. Tipperary. some now coming into ear; the crop, as a whole, is ten days later than usual. Barley, with favourable weather, should turn out a fair average crop. Potatoes later than last year; growing very well since earthed up; planted as a rule late under very unsatisfactory conditions. Mangels are now only beginning to grow; require plenty of heat if they are to develop thoroughly. Turnips doing fairly well at present; poor in some places; most were late of being sown, but these are now growing well. Cabbage look healthy. First crop hay very light, and cut a fortnight too late for good quality of fodder; broken weather for saving. Old meadows have improved very much for the past fortnight, but will not yield a full crop. Pastures looking very well at present. Cattle and sheep are thriving as well as can be expected; the price of the latter is still keeping very low; dairy cows are yet in full flow of milk.

Wheat: only small patches grown. Oats much improved by the late rains; now promises favourably. Barley

Co. Waterford. appears to have done better than oats; was checked by the severe weather in May, but now coming on. Potatoes looking healthy; those early planted or sprouted are best; late planted fields are stunted in some places. Mangels are thinned and looking well; some fields patchy. Turnips being thinned; the braird in general looks well; injury from "fly" this season very much less than usual. First crop hay much lighter than last season; some fields cut better than was expected. Old meadows now grow-

ing well and will be an average crop. Pasture very bare during the dry weather; is now coming green and sweet. Cattle in fair condition and health generally; stores are in low condition and considered unfit for shipment.

Ulster.

Wheat growing rapidly, and in general looks promising; some fields are patchy and thin, but, as a rule, well headed.

Co. Antrim. Oats have made a rapid growth during the past three weeks; the warm showery weather is forcing the crop ahead; promises to be good, except in some low-lying districts. Barley, where sown, has a satisfactory appearance. Beans look well and are in full bloom now; aphid has not yet appeared; some fields are backward; all much improved since the rain. Potatoes, where planted late, are backward; where put in timely are making good progress and promise satisfactorily; the crop is patchy and late on the stiff clay soils. Mangels are very uneven and generally late. Turnips are mostly late; early sowings on a good seed bed were much checked, but now coming on well and being singled; a good deal of damage by the turnip "fly," which necessitated re-sowing. Cabbage is doing fairly well. Flax is very variable in appearance; many fields thin and patchy; on heavy clay and on very light soils the drought checked the crop growth considerably; has not more than the promise of an average crop. First year's hay generally thin and light; very little saved so far, as cutting was delayed owing to the broken weather; a large proportion of the area under this crop will be kept for seed; some fields of crested dogstail grown for seed look well. Meadows promise a heavier yield. Pastures were bare till the third week in June, but are now well covered; an especially luxuriant growth of white clover noticeable in some places. Cattle doing well; good prices for beef cattle, but small grazing beasts are not meeting a good market. Sheep and lambs are fetching a disappointing price.

Wheat not much grown; appears to be average, but requires warmth. Oats looking well and luxuriant; in some

Co. Armagh. districts is short compared to the same period last year. Potatoes are variable; where planted early look well, but those planted in the dry weather are backward; some complaints of misses where cut sets were planted; sprouting has given very satisfactory results. Mangels not far forward yet, but showing a healthy braid; some fields were attacked by the mangel fly at an early stage, but have now recovered. Turnips doing

well, as a rule, though late; a good area thinned. Flax variable, but has improved much; early sowings have done best; some late sown fields have had to be ploughed up; crop will hardly be up to average. First crop hay is thin and will cut a light crop; most of it kept for seed; Italian rye grass will be fairly heavy, Perennial lighter. Meadows will be medium. Pastures very good now, and an abundant growth of white clover showing. Live stock are only just beginning to get over the severity of spring and the shortage of feed. Stores are selling well, though there is not the same keenness of demand as earlier in the season. Mutton, a drug in the market, and lambs not paying any profit.

Wheat very little grown; looks favourably. All oats much improved since the recent rain; crop promises better

Co. Cavan. than last year, but straw will be somewhat shorter.

Rye looks healthy on moory soils. Potatoes promise well and growing quickly. Mangels sparingly grown; not so forward as at this stage last year. Turnips are about being thinned; came on very slowly till the rain came; much damaged by the "fly" in some districts. Cabbages are a good crop where planted early. Flax is improving. Cutting of first crop hay has just been started; will be one-third a lighter crop than last year; old wet meadows are bad, and the quality of the grass poor; drier meadows much benefited by rain, and will cut a medium crop. Pastures are nicely covered now. Cattle are improved in condition. Dairy cows have been milking satisfactorily of late and are selling especially well; young stock are scarce and dear.

Wheat looking well, but not much sown. The oat crop shows good promise, but requires showery weather, else the

Co. Donegal. straw will be short; it is possible the harvest may be later than usual. Rye only grown in small plots

for green feeding; looks well. Beans and peas little grown, but look healthy. Potatoes are coming on well at present; rather late in some districts; sprouted fields are well forward and ready for spraying. Mangels not much grown; backward and patchy, and in some parts have suffered severely from fly attack. Early sown turnips are doing well; late sowings are thin and backward. Flax doing well so far, but short for the time of year; a very variable crop in appearance; early sown fields look best. Early planted cabbages are good. First crop hay generally a light crop. Old meadows are improving well. Pasture still poor and bare, but likely to improve now. Cattle are thin in condition; small stores back in price, with little demand;

strong stores, in good condition, are selling well. Sheep a poor price and almost unsaleable. Pork fetching a high price; young pigs, six to eight weeks old, fetching 30s. to 33s. each, with a good demand. Milch cows fetching a good fair price and a keen demand. Young horses selling better than for some previous years.

Wheat little grown; looks healthy, but thin, and will be a small crop. Oats likely to be a good crop of grain, but

Co. Down. straw short; lea oats very variable; on manured ground, short in many places. Barley appears to be thin, and will be a poor crop. Beans promise a fair yield. Potatoes are most uneven; a great deal of misses owing to planting unsprouted seed during dry weather in May; the crop is, on the whole, late, and late planted fields look badly; sprouted fields have by far the most promising appearance. Mangels not largely grown; brairds came very unevenly, but the crop has much improved of late. Turnips are nearly all thinned; not much trouble from "fly" this year; early sowings in good ground look well; later sowings on heavy ground are backward. Flax irregular and variable; many good fields, but others short and backward; much improved since the rain; may be an average crop. First crop hay a very light crop and not much clover in it; most of it will be allowed to grow out for seed saving. Pasture has improved, but little good grazing yet. Live stock just recovering since the grass began to freshen; healthy and growing, but thin in flesh. Prices of store stock are greatly back owing to the dry spell in May and June.

Wheat, a fair good crop, but sparingly grown. Oats generally good, unless on some damp fields, which were late

Co. Fermanagh. in being sown; much improved since the rain; will be above the average. The small patches of rye sown promise an average yield. Early planted potatoes doing well; those not planted until May are looking badly, and a great deal of misses in them; crop especially patchy through misses where cut sets were planted; sprouting has shown itself of great advantage. Mangels very variable; most of the crop is being thinned; an amount of patchiness showing. Turnips, where early sown, are doing well; late sowings coming on slowly and were badly checked by "fly" attack. Cabbages doing better now. Flax: thin, backward and uneven; little sown. Much first crop hay cut and some ricked; generally a light crop. Meadows will yield better than expected, but will be two to three weeks late. Pasture improved within the last month, and dairy cows milking well; live stock are beginning to get into condition.

Wheat little grown; looks well. Oats, especially on lea ground, a splendid crop; has improved much since the rain; better prospects than last year. Barley, where **Co. Londonderry.** grown (Coleraine district), appears very promising.

Beans are improving in appearance since the late rains; backward for this time of year and unusually thin. Potatoes are from two to three weeks later than usual; early planted fields look well; many misses among those late planted; the crop, as a whole, is very promising, and has made rapid growth of late; sprouted fields show to much advantage over those unsprouted. Mangels late, but look healthy; on many farms were a total failure and late sown turnips substituted. Early sown turnips look best; are now mostly thinned and doing well; later sowings were much scorched by night frosts; crop on the whole backward, and may not be up to the average. Cabbage are medium. Early sown flax is good; the later sowings are not so healthy looking; in general under the average. First crop hay, for the most part, light and deficient in clover; early cut fields have been well saved. Meadows in some districts may be better than last year. Pasture much improved lately; not carrying as much stock as usual. Young stock are thin in flesh; cattle have been dear all season; for good conditioned stores prices are still satisfactory; rougher sorts short of condition have gone back in value, and are not easily sold; beef very dear.

Wheat little sown; looking well. Oats never looked better; on lea ground the crop is better than after manure.

Co. Monaghan. Barley suffered more from drought than oats, but is improving; not much grown. Rye is a good crop. Potatoes look very well, but many of the later planted fields are gappy. Mangels were long kept back by dry weather, and are just now being thinned. Thinning of the turnip crop is general; the crop, as a whole, is healthy and promising, though backward. Flax in general looks poor; many fields were ploughed up and other crops substituted; though sown under good conditions of tilth, the crop had its chances destroyed by cold weather; the sowings of Dutch seed show best promise. First crop hay cut very light—not over half a crop. Old meadows are greatly improved in the last fortnight. Pastures much improved by the rain and warmth; variable. Young stock are doing very well; dairy cows giving a full flow of milk. Pork slightly reduced in price since the beginning of June, but still selling profitably.

Wheat looking strong and healthy; spring sown is thin and irregular. Oats short, but will be improved by the present rains; looks healthy, and will be an average crop. Rye promises fairly well. Potatoes are a fortnight late, but are doing well at present, especially those early planted; considerable blanks in the late planted fields, especially of kidney-shaped varieties; where sprouted there are no complaints to be made in this respect, and the crop is now much in advance of the unsprouted. Mangels are a very uneven crop, and have not yet recovered from the May frosts. Turnips are also very variable; those sown from 12th May to 30th May appear best; those sown earlier or later than these dates are bad; in some districts of the county the crop is reported to be looking very forward. Early planted cabbages look well. The flax crop is on the whole good, though there are a few bad fields where the soil is poor (Strabane district); has been much helped by rain; in other parts (Coagh district) the crop is reported to be late and uneven; very few good fields to be seen; not likely to yield up to the average. First crop hay will be light; cutting has just commenced. Meadows may turn out average. Pasture still backward, but improving much now. Cattle are thriving and healthy. Beef cattle and strong store bullocks are making good prices; small stores are not selling as well as they did in the beginning of May. Sheep and lambs are fetching low prices.

Connaught.

Wheat promises well, especially the autumn sown. Oats are light in the poorer districts; looking much better than last season in other parts; straw will be shorter than usual. Barley just eared out and will probably be an average crop. Rye only sown on reclaimed bog; is fairly good and will be above average. Potatoes are doing splendidly; those late planted were slow in growth, but are coming on rapidly now; the crop all over a fortnight behind. Mangels very irregular, though growing well now. Turnips are very promising, and a good area singled; in some places backward, having suffered from drought. First crop hay very light; cutting has just commenced. Old meadows much improved and likely to be an average crop. Pasture bare, but looking better recently; cattle are thriving fairly, notwithstanding the shortage of grass; the price of aged bullocks in moderate condition has improved considerably since the end of May; thin animals remain more or less of a drug. Sheep are selling badly and continue unprofitable; lambs are selling in local fairs at from 5s. to 7s. less

than last year; wool has dropped 1d. per lb. within the past month. Young pigs, five to ten weeks old, are selling well.

Wheat only grown in a few plots; looks well. Oats a very even crop and not so patchy as last year; a little late.

Co. Leitrim. Rye is a good average crop. Potatoes are very backward in some places, especially where planted on hard wet ground; where planted under favourable conditions the crop is promising. Mangels, up to 1st July were very sickly looking; in some cases failed entirely and had to be replaced by turnips. The turnip crop was greatly checked by the fly; thinning is just proceeding, and the crop is progressing well now. Cabbages are healthy; those late planted look poorly. First crop hay will be light; low-lying meadows promise well; upland meadows are short and scanty. Pasture is poor, but improving. Live stock are selling well, but rather low in condition.

The small patches of spring wheat grown are looking well. Oats later than last year, but still a good average crop;

Co. Mayo. on light soils after lea, straw will be short. Rye, a good average crop where early sown. Potatoes look healthy, though a fortnight later than last year. Mangels backward and not yet thinned. The turnip crop is looking fairly good since the late rain; early sowings were badly attacked by the "fly," and some fields had to be re-sown in consequences. Cabbages are backward in growth compared with previous years. The prospects of the flax crop in some parts of the district where it is grown (Ballina) are good; in others it looks short and stunted owing to late sowing through delay in obtaining seed. First and second rye grass hay is very light, especially where it was grazed in winter. Late meadows will stretch a little, but yields will be below average. Pasture has been bad, but much improved now. Live stock are thin; cattle in condition are selling very satisfactorily; beef especially dear; sheep and lambs in poor demand and prices low.

Wheat promises well. Oats is a very short crop, but has lengthened considerably of late. Barley promises to be

Co.

Roscommon. good. Rye appears to be excellent; it is mostly sown on moist soils. Potatoes, on the whole, good, but many fields are backward. Mangels were slow in coming up, and braided very irregularly; are now improving. Turnips, although late, are doing well, and are being thinned. Cabbages are looking well, especially where planted early. First crop hay is not more than

half as heavy as other years; a portion has been cut and saved. Old meadows are thickening and promise to yield a fair return. Pastures are improving now, but are as yet backward. Live stock are healthy and thriving. Dairy cows are increasing in milk flow; creamery authorities report that average supply up to this stage of the season has not yet been reached.

Wheat little sown; was somewhat stunted looking until the recent rain. Oats, particularly on stiff soils, suffered

Co. Sligo. much from drought up to very recently; straw very short; in some cases has come into ear. Barley, where sown early, looks well; later sowings do not seem so promising. Rye much improved lately and very fair for the time of year. Potatoes are a promising crop; late planted fields, however, look poorly; sprouted fields are much in advance; many fields are gappy through misses owing to the sets having rotted in the ground during the drought of May. Mangels are now fairly good in appearance. Turnips are being singled; are well forward especially where they were early sown; late sowings came up slowly and had to be re-sown in some cases. Cabbages are doing well since the rain; would require more moisture yet. First and second-crop hay is just being cut and is almost invariably light. Old meadows are thin, but have thickened out of late; still the crop is likely to be below average. Pasture very poor, but doing well now. Young cattle are just beginning to thrive; prices are satisfactory. Sheep are selling poorly; ewes are down 7s. to 8s. and lambs 7s. per head from last year's values. Wool is fetching from 9d. to 10½d. per lb.

FRUIT CROP REPORT, MID-JULY, 1909.

As the result of special inquiry from the Instructors in Horticulture, as well as from leading fruit growers in every county in Ireland, the following summary compiled from the large number of reports received indicates the present conditions and prospects of the 1909 fruit crop.

The nature of the season on the whole must be regarded as favourable. Though the heavy rain and low temperature of March and April much delayed growth, the late frosts which followed in the middle of May were in consequence unable to do the damage that might have been expected. The main characteristics of the spring season for fruit has been its coldness and lateness—in fact, as one correspondent points out, it has been due to the comparative lateness of the season that the unusually good blossoms were so well favoured in setting. In the matter of rainfall the chief feature for the six opening months of the year is the heavy records for March and April and the comparative dryness of the two months which succeeded.

The following are the figures recorded at three different centres of observation:—

	Co. Dublin.	Queen's Co.	Co. Limerick.
	Inches.	Inches.	Inches.
January . . .	1.889	—	2.64
February . . .	0.678	0.48	1.46
March . . .	2.945	2.83	2.85
April . . .	3.671	4.7	4.02
May . . .	1.123	1.24	1.45
June . . .	1.902	2.3	3.11

The dry weather which persisted during the first three weeks of May was accompanied by cold easterly and north-easterly winds; the temperature at night also sank abnormally low for the season, the thermometer at Adare Manor (Co. Limerick) registering 2° of Frost on 1st May, 3° on 2nd May, 1° on 13th May, 5½° on 14th May, and 5° on 18th May. A welcome change occurred about May 23rd, when soft genial rain which brought much relief to all kinds of vegetation set in, and was followed by a seasonable rise in the temperature. This change in the weather did not prevail long, however, and with the opening days of June another period of dryness asserted itself. The temperature likewise fell, and on the night of

7th June the thermometer registered 2° of Frost in Queen's Co. Little change occurred up till Sunday, 20th June, when rain fell generally and was succeeded by a number of wet days; the temperature still kept low, and from various counties there are complaints that considerable damage was done to certain kinds of fruit by heavy hail showers during this week. Towards the close of the month the temperature became more summer-like, and eventually on Friday and Saturday, 2nd and 3rd July, reached its maximum so far for the season.

Notwithstanding the abnormal lateness and character of the season the reports generally indicate that the yields of all kinds of fruit are expected to be very satisfactory. One correspondent goes so far as to express the belief that 1909 will prove to be the best fruit year for the past ten years; another correspondent asserts that the frosts ruined what promised to be a wonderful fruit year. It is generally admitted that, notwithstanding the frosts, every kind of fruit is likely to be a larger crop than could at one time have been expected. The particular crops which appear to have suffered most from frost are pears, plums, and the early strawberries; for the remainder the lateness of the setting stage appears to have enabled them to withstand its effects successfully.

The reports regarding the gooseberry crop go to show that it is the largest which has been obtained for a number of years past.

Although the damage to bushes from the caterpillars of the gooseberry saw-fly has been considerable all over the country, the yields are unanimously described as heavy. Considerable injury has been done in some counties by American gooseberry mildew attack, and in consequence much loss has been sustained, through the affected bushes having to be burned.

Strawberries are generally reported as plentiful. Some correspondents state that much damage was done to the

Strawberries. plants when in flower by the abnormally late frosts. The prolonged drought in June was also unfavourable to fruit development. The crop on the whole was late, one correspondent states fourteen days later than last year and in some counties (*e.g.*, Co. Cavan) were not ripe in any quantity until 1st July. There are complaints from some counties that the berries did not swell and ripen normally as in other years owing to the unseasonable character of June.

Raspberries are stated to show a fair promise, though much injury to the early fruit is stated to have been caused by

Raspberries. the severity and harshness of the weather and the showers of hail which fell.

Red and white currants are, as a rule, described as carrying a heavy crop. Black currants are also giving full

Currants. yields, though the late frosts are stated to have caused many of the immature berries to drop off.

The currant mite and green fly did considerable damage in most counties.

Apples are everywhere described as a splendid crop. The lateness of the season checked the progress of the

Apple and Pear blossoms, and the late frosts, though inflicting
Crop. some damage, did not catch the crop at the critical stage. Young trees are stated to be exceptionally

well laden, and considerable thinning of the fruit carried rendered necessary. Pears did not withstand the severity of the late spring so well, except on walls or in sheltered situations, but the crop will prove up to an average yield.

Plums are variable. The crop appears to have been much injured

Plums and by the frosts. The Victoria variety is reported
Damsons. on very favourably. Damsons are stated to be a light crop, but are not very extensively grown.

Cherries are all round a good crop, notwithstanding the fact that stormy weather during the blossoming period must

Cherries. have kept much fruit from setting satisfactorily. Morellos are generally stated to be plentiful.

It does not appear to have been a bad season for either insect or fungoid pests. The gooseberry saw-fly caterpillar

Insect and on gooseberries, black currant mite, green and
Fungoid Attacks. black aphid on pear, apple, and plum foliage, winter moth, ermine and codlin moth caterpillars, apple sucker and American blight on apples were the chief insect depredators, and did considerable damage in some counties. Attack from codlin moth appears to be on the increase in the southern counties. Amongst the most common fungoid attacks were American gooseberry mildew on gooseberries and canker on apple trees: from some counties there are complaints of the fungus of scab appearing on the growing crop of apples.

The following is a summary of the individual reports which have been received from the different counties:—

Leinster.

Gooseberries, an extra heavy crop. Strawberries, a good crop.

**County
Carlow.**

Raspberries, good yield; promise well, but backward. Red and black currants, a very heavy crop. Apples will be a heavy yield generally. Pears a fairly good crop. Plums, average; fairly good; much affected by frosts in low-lying districts. Damsons, not much grown; a heavy crop. Cherries, an over-average abundant crop. Insect attacks not very severe, except gooseberry caterpillar; of the fungoid attacks, American gooseberry mildew the most widespread.

Gooseberries, very plentiful; above average. Strawberries, very

**County
Dublin.**

good and ripening well. Raspberries, very good. Red, white and black currants, a heavy crop. Apples, very good. Pears, average. Plums, a heavy yield on trees. Damsons, a fair yield in some orchards. Cherries, very good. Green fly on plums and black currants did much damage; codlin and ermine caterpillars were severe on the apple crop; mildews not as prevalent as usual.

Gooseberries, a very heavy crop. Strawberries, good, though suf-

**County
Kildare.**

fered much from frosts. Raspberries promise well. Red, white and black currants, over average. Apples, an uneven crop; below the average over the county as a whole. Pears on walls, an average yield; in the open, poor. Plums below the average on walls; bad in the open. Damsons, average. Loganberries, a very heavy crop. Peaches, excellent. Aphis severe on black currants; gooseberries suffered much from caterpillar saw-fly attack; winter moth did much damage to apple trees. American gooseberry mildew very prevalent.

Gooseberries, very plentiful. Strawberries, very good; frosts and

**County
Kilkenny.**

hail injured the early sorts. Raspberries, excellent. Currants of all kinds a fair crop. Apples in some districts heavier than last year; a fair average crop. Pears, good. Plums, average; some varieties very good. Damsons, fair. Peaches and apricots above average. Cherries and loganberries are both prolific crops. Gooseberry saw-fly did much damage; canker prevalent on apple trees, and some cases of American gooseberry mildew.

Gooseberries, a plentiful supply. Strawberries, fair, but late;

**King's
County.**

some fruits killed by late frosts. Raspberries promise an excellent yield. Currants are all good, but late in ripening. Apples, plentiful and good.

Pears, good; early sorts have not yielded so well. Plums, good to average. Damsons, fair to poor. Cherries and apricots, good. Worst insect pests were American blight, codlin moth and aphid. American gooseberry mildew was the most troublesome form of fungoid attack.

Gooseberries, an excellent crop throughout the county. Straw-

**County
Longford.**

berries, plentiful and large; early flowers were much cut down by frost. Raspberries promise well. Red currants, an extra good crop. Black

currants appear blighted by frost. Apples, a good crop, though somewhat injured by late frosts and harsh winds. Pears, a fair crop on young trees; rather poor on old trees. Plums, uneven; damaged by frost when in flower. Damsons, where grown, a fair crop. Gooseberries much injured by saw-fly caterpillar; very little black currant mite compared with other seasons. Apple trees planted on grass land have been badly cankered; also in some cases affected with American blight.

Gooseberries, above an average crop in bulk. Strawberries, plenti-

**County
Louth.**

ful. Raspberries, an average yield of good quality.

Red, white and black currants, plentiful. Apples, the heaviest crop for the past ten years, and promise to grow clean and free from scab. Pears, a medium yield, though better than last year. Plums, good on walls, especially Victorias. Damsons, a good crop. Cherries are fair. Caterpillars of the winter and ermine moths and also of the gooseberry saw-fly were the most troublesome insect pests. American gooseberry mildew did much damage.

Gooseberries generally a full crop. Strawberries, good. Rasp-

**County
Meath.**

berries, excellent. Red, white and black currants have yielded heavily. Apples much above the average crop; the largest yield for many years.

Pears are but moderate. Plums, good in some districts; generally fair to bad. Damsons much injured in foliage by green fly; a poor crop in some districts. Cherries, good. Loganberries, a heavy crop. Green fly and the caterpillars of the gooseberry saw-fly were the only insect pests of consequence. Gooseberry American mildew was the most noticeable form of fungus attack.

Gooseberries are a splendid crop compared with the insignificant yield last year. Strawberries were a very heavy crop, though the early bloom were much injured by frost. Raspberries promise to give an excellent yield of fruit. Currants of all kinds are plentiful on the bushes, and the latter have been unharmed by "big bud." Apples, a heavy crop of clean fruit. Pears, very fair; much damaged by late spring frosts. Plums scarce and Damsons not much grown. Cherries, good. Codlin moth attack observable, but not severe; aphids troublesome, also gooseberry saw-fly. American mildew is widespread.

Gooseberries, an excellent yield. Strawberries, raspberries and all kinds of currants are all carrying satisfactory crops. Apples and pears, an exceptional crop, though, in one district, stated not to be so heavy as last year owing to May frosts. Plums, an average yield; suffered from the dry, parching weather in May. Damsons and other fruits where grown are beyond the average. Morello cherries are carrying a heavy crop. Winter, codlin and ermine moths, also gooseberry saw-fly caterpillar and black currant mite, were the chief insect pests. American gooseberry mildew was the most prevalent fungus attack.

Gooseberries, very good. Strawberries, good to average. Raspberries, average. Currants, excellent yield and not affected with mite. Apples are a very heavy crop. Pears appear below the average. Plums, poor. Damsons, scarce; much injured by frost. Morello cherries, a heavy crop. Ermine moth caterpillar very prevalent. American blight and gooseberry saw-fly did not do as much damage as last year. Canker prevalent.

Gooseberries, very plentiful. Strawberries, excellent. Raspberries, an average yield. Red and white currants, a heavy crop. Apples, an excellent crop. Pears, a fair crop and very good in some parts. Plums only fair; in some districts very good. Damsons, light. Cherries, good. Loganberries give promise of being an excellent crop. Insect attack not very troublesome; pear midge, American blight and green fly were the most noticeable; also black currant mite, Canker and American gooseberry mildew prevalent in some districts.

Munster.

Gooseberries, a very heavy crop all round. Strawberries, over average. Raspberries promise heavy yields. Red and white currants, average; black currants, very good.

**County
Clare.**

Apples generally an extra crop; in one district reported poor. Pears, an average good yield. Plums, an average yield on the whole. Damsons, average to fair. Cherries, not much grown; moderate to very good. The most troublesome insect pests were American blight, gooseberry caterpillars, codlin moth, and, to some extent, black currant mite. Scab on apples and pears, and American gooseberry mildew were the chief forms of fungoid attack.

Gooseberries, a good crop. Strawberries, medium. Raspberries,

**County
Cork.**

a fair average yield. Currants generally a good crop. Apples, a heavy yield; some varieties cropped light. Pears, good in sheltered situations.

Plums, a good average on walls and where grown in shelter. Damsons, not largely grown. Chief insect pests were winter moth caterpillars, apple-sucker fly, black currant mite and gooseberry saw-fly. Little or no complaints of the American gooseberry mildew.

Gooseberries, extra good. Strawberries, average; suffered from

**County
Kerry.**

drought. Raspberries have the appearance of a heavy crop. Red and white currants, not much grown; a good crop. Apples, a very heavy crop, both young and old trees bearing splendidly. Pears, not much grown in the open; very good on walls. Plums, good on walls; bad in the open; not much grown. Damsons, poor; sparingly grown. American blight very bad in old orchards; apple-sucker also very plentiful. Apple canker the chief fungoid attack observed.

Gooseberries, abundant. Strawberries, average. Raspberries,

**County
Limerick.**

fair. Red, white and black currants, an average. Apples, very good. Pears, under average. Plums, light in yield. Damsons, fair. Cherries, a poor crop. No black currant mite, but woolly aphis or American blight very prevalent on old apple trees; green and black fly also prevalent; other pests not so bad this year. Very few cases of American gooseberry mildew reported.

Gooseberries, a very good yield. Strawberries, an average yield, but not much grown. Raspberries, average. Red,

**County
Tipperary.**

white and black currants, a good crop. Apples—the best crop for several seasons—over average in most places. Pears, a light crop in the open, but

good on walls. Plums, a good yield in sheltered places. Damsons, not much grown; fair average yield. Other fruits, fair. Green fly and ermine moth plentiful; a few cases of black currant mite reported. No cases of American mildew were noticeable.

Gooseberries carry a full crop. Strawberries, above average;

May frosts caused material damage. Raspberries,

County average. All currant varieties are a fine crop.

Waterford. Apples, above the average in yield, with a promise of good clean fruit. Pears will be average. Plums,

rather under the average, with the exception of the Victorias, which are carrying heavy crops. Damsons, poor—not much grown. Cherries, a good crop, especially the May Duke variety. Loganberries are showing a good heavy crop. The green fly was very troublesome; some traces of American blight; much damage to gooseberries from saw-fly caterpillars; pear midge very prevalent in some districts. American gooseberry mildew not quite so bad as last year; the young apple fruit much affected with the black-spot fungus.

Ulster.

Gooseberries generally a good crop. Strawberries also good. Raspberries, fair to good. Red,

County white and black currants, good in quantity;

Antrim. in some soils rather small in size of berry. Apples, average. Pears, variable; a small to fair crop.

Plums, irregular; some almost a failure; Victorias a very good crop. Damsons, light to medium. Cherries, medium. Insect and fungoid pests did much damage in some districts; in others, were not so troublesome as last year. Chief insect pests were apple-sucker, winter moth, ermine moth and green fly. Apple scab was the most prevalent form of fungus.

Gooseberries, a good crop, but area not so large owing to the ravages of the American gooseberry mildew.

County

Armagh.

Strawberries, light to average; not so much grown in some districts as formerly. Raspberries, a

heavy yield. Red and white currants are a satisfactory crop. Black currants, fair to good. Apples promise to beat all records. Pears below average; very uneven. Plums, medium to good. Damsons, good. Other fruits, fair. Apple-sucker and caterpillars of the winter and ermine moths were the most troublesome insect pests. Gooseberries escaped caterpillar attack fairly well. Black currant

mite was severe in some plantations. American gooseberry mildew was the most injurious fungus.

Gooseberries, a splendid crop. Strawberries, plentiful and of good size. Raspberries and currants are both yielding better than last year. Apples, excellent in yield, especially young trees. Pears and plums, little grown. Cherries, good. Loganberries, fair. Gooseberry caterpillar gave much trouble; aphid was very prevalent in red currants and on some varieties of apples; there was not much evidence of American gooseberry mildew and black currant mite.

Gooseberries, an excellent yield and selling cheap. Strawberries, a fair crop. Raspberries also fair, but suffered much from cold winds. Red, white and black currants, a large crop, but not swelling regularly. Apples have all the appearance of a full crop. Pears, only fair. Plums, medium. Damsons, fair. Cherries, good. Insect attack was not bad this year. Codlin moth, gooseberry saw-fly, and green fly gave most trouble. There were some slight attacks of mildew on apples, and cluster-cup on gooseberries; canker was also prevalent in some orchards, and a few cases of American gooseberry mildew.

Gooseberries, heavy in yield; many bushes had to be destroyed owing to the ravages of American gooseberry mildew. Strawberries, very good. Raspberries, about an average yield; suffered badly from severe weather. Red and white currants, an average crop. Black currants, very good where not attacked by the mite. Apples, a large crop; fruit clean and swelling up well since the rain. Pears, under the average. Plums, average to good. Damsons, where grown, fair. Cherries suffered much when in flower; average crop. Loganberries, a very heavy crop. Gooseberry caterpillar and black currant mite were prevalent; green fly was also severe on plums and apples. American gooseberry mildew was the most serious fungus to be dealt with. Canker did much harm to apple trees.

Gooseberries, very good, except in exposed or damp positions. Strawberries, good; in some districts reported to be not swelling and ripening well. Raspberries promise to be a good crop. Red and white currants, average; black currants have every prospect of an abundant yield. Apples are very good in yield and quality. Pears, light to average. Plums, good; only moderate in some districts. Damsons, much below average. Cherries, a heavy crop, especially on walls. Apple-

sucker was not so injurious as in past years, but aphids did more than ordinary damage to apples and plums. Gooseberry saw-fly and magpie moth caterpillars did much harm. Winter moth caterpillars not so plentiful as in other years. American gooseberry mildew appeared in several places; radical measures, however, kept it from spreading.

Gooseberries, excellent. Strawberries, good in quantity, but late and not ripening so well as promised. Raspberries

County Londonderry. promise well. Red, white and black currants, good. Apples, a fine crop. Pears, fair; no large quantity grown. Plums, uneven; on the whole not good. Damsons, poor to fair. Cherries, good. Loganberries have good promise. The only insect pest that gave any trouble was the gooseberry saw-fly. American gooseberry mildew did much damage in several districts; canker not much in evidence.

Gooseberries, very good. Strawberries, good, but suffered from drought. Raspberries, good; not much cultivated.

County Monaghan. Red, white and black currants, a heavy yield, and the latter kind of a large size. Apples, an over-abundant crop; would require severe thinning. Pears, a fair yield; not many grown. Plums, medium. Damsons, average; very poor yield in some places. Cherries, a good crop. Gooseberry saw-fly caterpillars, codlin moths and apple-suckers were the most injurious insect pests. Canker and scab in apples were the chief forms of fungus attack.

Gooseberries, plentiful and of good size. Strawberries, an excellent yield. Raspberries, fair; much interfered

County Tyrone. with by the severity of early June. Red, white and black currants, uneven; will not be an all-round good crop; suffered from the harsh weather in May. Apples give a good promise. Pears, variable, but in some places a good crop. Plums, fair to good. Damsons, very little grown; a fair crop. Cherries, an abundant crop. Aphids, both green and black, have been unusually troublesome; gooseberry saw-fly caterpillars have not been so bad as last year; winter-moth caterpillar did much damage in several places. Reports of injury from American gooseberry mildew attack are very few.

Connaught.

Gooseberries, a full crop. Strawberries, an average yield, but the cold in early June injured the blossoms very much. Raspberries generally below the average. Red and white currants, a good crop in some districts;

County Galway.

below the average in others. Black currants, an excellent crop and very plentiful. Apples generally a heavy crop; in some parts under the average. Pears, very poor in unsheltered situations. Plums below the average. Damsons, not much grown. Cherries on walls, an average crop. Other fruit, fair all round. Ermine moth and gooseberry caterpillar have caused a good deal of harm; green and black aphids have also been troublesome, and American blight on apple trees.

Gooseberries, a good crop. Strawberries, medium. Raspberries, fair. Currants of all kinds, good. Apples, medium to good. Pears, a poor crop. Plums, poor. Damsons, not grown. Cherries, a medium crop. Gooseberry caterpillar was very troublesome.

**County
Leitrim.**

Gooseberries, very good; much above the average. Strawberries, plentiful, but rather slow in ripening. Raspberries, a fair prospect. Currants of all kinds, plentiful. Apples look promising. Pears, fair; very little grown. Plums rather above the average. Damsons, not much grown; a small crop. Gooseberry saw-fly caterpillars were very destructive; in a few districts black currant mite was very prevalent. Little or no damage reported from American gooseberry mildew.

**County
Mayo.**

Gooseberries, probably the best crop for many seasons. Strawberries, a good crop. Raspberries, average. Red and white currants, fair to good. Black currants, a heavy yield. Apples, good; young trees bearing well. Pears below the average, little grown. Plums, under average, not much grown. Damsons, scarcely any grown. Cherries, good. Gooseberry saw-fly caterpillar troublesome. Canker on young apple trees prevalent.

**County
Roscommon.**

Gooseberries, a very heavy crop. Strawberries, an excellent yield, though in some places light. Raspberries, average; uneven in some districts. Currants of all kinds abundant. Apples, a good crop, well over average. Pears, a light crop, but better than last season. Plums, average. Damsons, not much grown; a light crop. Cherries, a good crop. The gooseberry saw-fly and the green-fly were the most injurious insect pests. Canker in wet soils was the most prevalent fungoid disease.

**County
Sligo.**

REPORT ON THE PREVALENCE OF POTATO BLIGHT IN IRELAND UP TO 17TH JULY, 1909.

The appearance of Blight on the Potato Crop this year was reported some days earlier than last season. In one of the seaboard districts of County Mayo (Belmullet) it showed itself as early as 6th June, whilst last season the first Report of Blight in Ireland was reported from the same district on 10th June. Up to the 19th of June this year, 7 cases in all were reported. These were located in the following counties:—Kerry (2), Mayo (1), Galway (1), Cork (1), Wexford (1), Roscommon (1). Up to 20th June, 1908, the corresponding number of outbreaks reported numbered 11. During the week ended 26th of June, 1909, one fresh case was reported from County Galway. A comparison of the returns furnished for the similar periods in the years 1907, 1908 and 1909 is shown in the appended table:—

NUMBER OF CASES REPORTED.

County.	For week ended 29 June 1907.	For week ended 27 June 1908.	For week ended 26 June 1909.	County.	For week ended 29 June 1907.	For week ended 27 June 1908.	For week ended 26 June 1909.
Mayo, .	13	10	1	Westmeath,	0	1	0
Roscommon,	2	5	1	Cavan, .	2	0	0
Sligo, .	1	4	0	Monaghan,	2	0	0
Kerry, .	2	3	2	Donegal, .	2	0	0
Tipperary, .	2	3	0	Fermanagh,	1	0	0
Cork, .	7	2	1	Clare, .	1	0	0
Waterford,	3	1	0	Longford, .	1	0	0
Galway, .	0	11	2	Wexford, .	0	0	1
Dublin, .	0	1	0				

The number of outbreaks at this stage, it will be seen, was much about the same for the years 1907 and 1908 (39 in the former and 41 in the latter), whereas only 8 cases were notified in 1909.

For each of the three weeks ended 3rd July, 15th July and 17th July, respectively, this year reports were received from approximately 1,300 rural constabulary sub-districts. The following comparative table shows the number of sub-districts from which blight outbreaks were reported in the corresponding three weeks of the seasons 1907, 1908 and 1908 :—

1907.	1908.	1909.
214 up to 6th July.	104 up to 4th July.	20 up to 3rd July.
309 up to 9th July.	213 up to 11th July.	67 up to 10th July.
438 up to 16th July.	295 up to 18th July.	171 up to 17th July.

During the first weeks the outbreaks notified occurred for the most part amongst early varieties in gardens. This fact must not be overlooked in estimating the prevalence of disease from the number of affected districts reported. Up to the 10th of July only a small portion of the outbreaks had reference to the general field crops, and these were confined mostly to sheltered places and wet or low-lying soils. Even at 17th July the attack appears to be mainly confined to garden plots; the general lateness of the field crop and the absence of close moist weather have apparently the affection to be less widespread than usual at this stage of the season.

ACTION OF THE DEPARTMENT.

The action which has been taken by the Department this season to secure the more general use of spraying may be stated briefly as follows :—

Over 225,000 copies of the Department's leaflet No. 14, dealing with the prevention of potato blight and giving full directions with regard to the spraying of potatoes, have been printed and distributed through the National Schools and through numerous other sources to farmers in every district in Ireland.

Placards reminding farmers of the necessity for early spraying and advising them to buy the raw material and prepare their own mixtures, have been displayed in every district in Ireland, and have also been sent to National Schools and to Co-operative societies.

The arrangements for testing the purity of samples of Copper Sulphate and Washing Soda at a nominal fee of 3d. per sample have been continued, and over 300 samples have already been examined.

The County Instructors in Agriculture and Horticulture, of whom over 60 are now employed, have given special attention to the encouragement of spraying.

Loans are granted for the purchase of approved horse-spraying machines to persons selected by County Committees, and who are prepared to spray their neighbours' potatoes, at charges fixed by these Committees.

Fifteen loans have been already granted.

County Committees have been empowered to purchase a limited number of hand-spraying machines to be hired out at a small daily charge to farmers and others in the poorer districts. Action in this matter has been taken by ten Committees.

Forty overseers and assistants are employed by the Department in congested areas of counties Donegal, Mayo, Galway, Leitrim, Roscommon, Kerry and Cork, and, as forming part of their duties, these officers are required—

- (a) To repair spraying machines which are out of order, charging only the cost price of new parts used.
- (b) To sell spraying machines where such cannot be obtained locally at cost price to farmers within certain limits of valuation; and,
- (c) Generally, to give demonstrations in spraying, as well as such instruction and advice as may be required by persons in their district.

In these counties over 1,000 spraying machines have been distributed up to date.

POTATO DISEASE.

The Department again desire to direct attention to certain diseases which continue to cause considerable injury to the potato crop. The diseases appear to be most prevalent in the West of Ireland, where they are known as "Haughing," "Blackleg," &c. They are easily distinguished from the ordinary or black blight by the fact that the foliage does not blacken, but rather, in certain instances, tends to

become yellow. For this reason these diseases have often been referred to collectively as "Yellow Blight," a term which tends, however, to lead to confusion.

In order to obtain further information as to the causes and possible means of prevention of these diseases the Department have established a temporary research station at Clifden, County Galway, where an extensive series of experimental plots has been laid down. In addition to this, plots with a similar object in view have been established in a large number of other districts where Agricultural overseers are at work.

Farmers are specially invited to co-operate by sending particulars of the occurrence of any of these diseases in their districts. Specimens of diseased plants for examination and report can be sent free by letter post when addressed to the Secretary, Department of Agriculture and Technical Instruction for Ireland, Upper Merrion Street, Dublin. Such specimens should consist of the whole plant, including tubers, and should preferably be sent packed in a box.

THE MEAT SUPPLY OF THE UNITED KINGDOM.

Present-day agriculturists have always to bear in mind the fact that, as a result of thirty years' progress in commerce and invention, the trade in every form of food commodities is no longer local, provincial, or even national, but has become essentially international. The range of competition, which, for the last generation of farmers, did not extend beyond the local suppliers of the nearest market, is now unchecked by distance.

So far as agricultural produce is concerned, the laws of supply and demand operate in a world-wide market, and trade is regulated by the influences which these economic forces exert. A falling off in the American potato crop excites a demand which is met by supplies of the United Kingdom; a deficiency in the supply of one wheat exporting country is compensated for by an increased output from another country in a different hemisphere. Every phase of the market prices for agricultural produce in the United Kingdom demonstrates the breadth of the source of supply, and illustrates the degree to which such prices are affected by factors that have to be considered in accounting for the trend of past values or in speculating with respect to future movements.

In no branch of production is this feature of modern agricultural conditions more strongly noticeable than in the supplies of beef, mutton and pork annually forwarded to meet the market requirements of Great Britain. A drought in Australia, a deficient maize crop in America, a shrinkage in the number of Danish pigs, are causes which, in themselves apparently remote, have operated to affect prices for the home producer. The sources of the meat supply to the United Kingdom are so diverse that no constancy from year to year can be reckoned upon from any one producing centre; further, the varying rates of increase of population in the different countries are always operating in checking the flow of supply in one direction, and diverting it towards another. From the home producer's standpoint, then, and more especially from that of Irish stock owners, whose profits are so largely dependent on the condition of the cross-channel trade, an examination of the present position of the United Kingdom market for the three great classes of meat may

Modern Conditions of Marketing Agricultural Produce.

The World-wide Nature of the U.K. Meat Supply.

prove helpful in adjudging future possibilities, and considering prospective lines of development.

Much information bearing on this most important economic study for home producers has been brought together in the Minutes of Evidence taken before the Departmental Committee appointed to inquire into Combinations in the Meat Trade of the United Kingdom, as well as in the Report of the same Committee, which has recently been published.

The evidence and the findings based on it deal in an exhaustive manner with aspects of the meat supply problem, and together supply a very clear view of the whole situation as it exists at present: in addition, both publications contain a quantity of statistical material not hitherto available, but of extreme value in comprehending the progress of the trade and the changes that it has undergone.

By far the most important change in the marketing of meat in the United Kingdom since the seventies has been the **Refrigeration and the Meat Trade.** revolution caused by the refrigerating process. The discovery and improvement of this method of handling meat at once increased the possibilities of new and more distant sources of supply, and also materially transformed the nature of the existing trade. A falling off in the import of live animals, which was still further accentuated by the Orders issued to guard against disease infection, at once manifested itself, and, since 1870, the numbers of live animals imported each year have been as steadily contracting as the supply of dead meat has been increasing. This double movement is thus referred to in the Meat Committee Report, par. 10, p. 3:—"The importation of live animals has, except in the case of cattle, almost disappeared, and in the last three years the importation of cattle has tended to diminish, and this downward movement seems likely to continue. The decline in the imports of live animals is due in part to the Orders issued by the Board of Agriculture and Fisheries under the provisions of the Diseases of Animals Acts; in part to changes in trade methods; and in part to temporary causes. . . ." The following table gives the average animal importations for seven quinquennial periods and for the four latest years:—

TABLE I.
IMPORTATIONS OF LIVE ANIMALS, 1870-1908.

Period.	Cattle.	Sheep and Lambs.	Pigs.
Average 1870-74, . . .	206,331	801,367	78,731
" 1875-79, . . .	247,979	947,610	48,808
" 1880-84, . . .	390,611	1,012,363	31,289
" 1885-89, . . .	384,194	879,085	21,934
" 1890-94, . . .	493,545	265,858	1,710
" 1894-99, . . .	533,802	743,614	258
" 1900-04, . . .	496,569	359,222	—
1905, . . .	565,139	183,084	150
1906, . . .	561,215	103,359	—
1907, . . .	472,015	105,601	—
1908, . . .	383,130	78,900	—

According to par. 13, p. 4, of the Report, " the imports of *chilled and frozen beef*, on the other hand, have increased very rapidly in recent years." The following summary table shows the average annual imports for seven quinquennial periods and also the amounts for the four latest years:—

TABLE II.
IMPORTS FOR CHILLED AND FROZEN BEEF, 1870-1908.

Period.	*Total Imports.	Imports from Principal Countries.			
		United States.	Argentine Republic.	New Zealand.	Australia.
	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.
Average 1870-74, . . .	29,839	1,095†	—	—	—
" 1875-79, . . .	350,733	326,664	—	—	—
" 1880-84, . . .	738,357	692,289	500‡	2138§	—
" 1885-89, . . .	917,085	864,154	4,056	28,765	8,744
" 1890-94, . . .	1,953,379	1,731,620	14,478	55,059	126,498
" 1895-99, . . .	2,952,968	2,204,919	83,362	69,146	536,504
" 1900-1904, . . .	4,170,780	2,685,550	987,084	222,178	175,440
1905, . . .	5,037,521	2,232,206	2,580,152	145,338	19,025
1906, . . .	5,523,809	2,426,644	2,795,913	236,587	34,457
1907, . . .	5,735,003	2,417,604	2,691,554	391,299	126,030
1908, . . .	5,631,989	1,432,142	3,590,307	347,872	112,583

* Including a small quantity of untreated meat. †1874 only. ‡ 1884 only. §New Zealand and Australia average for 1883 and 1884.

This transformation from a live stock to a dead meat trade led to important changes in the sources of supply. European countries, which sent annually considerable numbers of live stock, at once

dropped out; more distant sources such as Argentina, Australia, and New Zealand, took a stronger hold on the market. Refrigeration gave countries access to the market that were hitherto debarred by distance. The spread and improvement of the system, moreover, disclosed the capacity of the various sources of supply, and the particular description of meat in which these were especially fitted either through climatic or other conditions to deal. Thus a process of concentration in certain branches of the trade resulted, and this specialisation on the part of the different meat supplying countries shows tokens of becoming more still accentuated.

The estimated total annual consumption for the United Kingdom (1907-1908) has been put at the following amounts:—

U.K. Meat	Beef	...	...	22,844,000 cwt.
Consumption is	Mutton	...	...	10,000,000 "
Met.	Pig Meat	...	...	13,453,000 "

The quantity of the three foregoing classes of meat derived from home and foreign sources, respectively, was estimated to be as follows:—

	Home. Cwts.	Foreign. Cwts.	Percentage of Home Supplies to total.
Beef,	13,886,360	8,958,880	60·8
Mutton,	5,635,560	4,452,040	55·9
Pig Meat,	5,791,100	7,660,820	43·1

It will thus be seen that only in the case of pig meat does the foreign exceed the home supply. A comparison of the figures for the past decade shows that the proportion of foreign meat tends to gain on that of home-grown meat. The three following tables taken from the report brings out this fact clearly:—

TABLE III.

ESTIMATED MEAT SUPPLY OF THE UNITED KINGDOM, 1898-9 to 1907-8.

Years.	All Meat.		
	Home.	*Foreign.	Total.
	Cwts.	Cwts.	Cwts.
1898-9,	23,704,740	19,397,420	43,102,160
1899-1900,	26,062,660	20,266,320	46,328,980
1900-1,	25,200,980	20,935,840	46,136,820
1901-2,	25,174,840	20,488,100	45,662,940
1902-3,	24,448,080	18,745,360	43,193,440
1903-4,	24,904,420	20,594,520	45,498,940
1904-5,	25,833,200	20,789,000	46,622,200
1905-6,	24,870,720	21,842,900	46,713,620
1906-7,	24,835,260	21,364,720	46,199,980
1907-8,	25,313,020	21,537,360	46,850,380

* Including "Meat, unenumerated" and less exports of dead meat (British and Foreign).

TABLE IV.

ESTIMATED SUPPLY OF THE DIFFERENT DESCRIPTIONS OF MEAT IN THE SAME PERIOD.

Years.	Beef and Veal.			Mutton and Lamb.			Pig Meat.		
	Home.	Foreign.	Total.	Home.	Foreign.	Total.	Home.	Foreign.	Total.
	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.
1898-9	12,448,380	7,206,860	19,655,240	5,988,600	3,792,840	9,781,440	5,267,760	8,576,060	13,843,820
1899-1900	13,156,500	7,877,360	21,033,860	6,607,820	3,837,240	10,445,060	6,298,340	8,523,120	14,821,460
1900-1	13,365,120	8,322,060	21,708,080	6,238,460	3,896,380	10,134,840	5,577,400	8,490,940	14,068,340
1901-2	13,945,980	8,014,460	21,958,380	6,422,240	3,698,620	10,120,860	4,808,620	8,444,100	13,252,720
1902-3	13,311,780	7,218,460	20,530,240	6,125,200	4,069,920	10,215,120	5,011,100	7,005,140	12,016,240
1903-4	12,772,460	8,669,680	21,442,140	6,168,360	3,966,080	10,154,440	5,943,600	7,365,380	13,308,980
1904-5	13,393,360	8,799,600	22,192,960	5,938,680	3,925,580	9,864,260	6,501,160	7,516,060	14,017,220
1905-6	13,792,980	9,813,340	23,606,320	5,910,780	4,014,820	9,925,600	5,166,960	7,494,080	12,661,040
1906-7	14,290,500	9,312,580	23,603,080	5,696,900	4,475,740	10,172,640	4,847,860	7,193,440	12,041,300
1907-8	13,886,360	8,958,880	22,845,240	5,635,560	4,452,420	10,087,980	5,791,100	7,660,280	13,451,380

TABLE V.

PERCENTAGE OF HOME SUPPLIES TO THE TOTAL SUPPLIES IN THE SAME PERIOD.

Years.	Percentage of Home Supplies to Total Supplies of			
	Beef and Veal.	Mutton and Lamb.	Pig Meat.	All Meats.
1898-9, . . .	63.3	61.2	38.1	55.0
1899-1900, . . .	62.5	63.3	42.5	56.3
1900-1, . . .	61.7	61.6	39.6	54.6
1901-2, . . .	63.5	63.5	36.3	55.1
1902-3, . . .	64.8	60.0	41.7	56.6
1903-4, . . .	59.6	60.9	44.7	54.7
1904-5, . . .	60.3	60.2	46.4	55.4
1905-6, . . .	58.4	59.6	40.8	53.2
1906-7, . . .	60.5	56.0	40.3	53.8
1907-8, . . .	60.8	55.9	43.1	54.0

Hence, it is apparent, in the words of the Report, that "with the home supply remaining practically stationary, the increased demand, due to the growth of population and an advance in the standard of consumption, has been met by rising importation."

Looking at the three chief descriptions of meat, the general conclusions which an examination of the import returns discloses are that Argentina, U.S. America, and New Zealand, are likely to continue as the chief origin of the beef supply, New Zealand, Argentina, and Australia of the mutton supply, and Denmark and Canada of the pig meat supply. Beef supplies from the United States have been showing a considerable falling off during the past two years, and this decline has raised the important question as to whether the maximum supply of beef, which that country can afford to send to the United

Kingdom market, has already been reached or whether the drop is only a temporary phase. There is general agreement that the immediate explanation of this decrease in American beef supplies may be

**The Falling off
in American
Beef Supplies:
Will it
Continue?** directly traced to a deficiency in the maize crop of 1907, accentuated as this was by a period of financial depression. Whether, however, when these influences have passed, the supply will equal or exceed that of the preceding period, gives room for conjecture. According to a recent authority* on the

subject, "the rough indications which may be deduced from such knowledge as we have of the live stock now existing in different parts of the world, and from the trade statistics of the past thirty years, are that the surplus available from North America has now about reached its maximum, and will before many years have passed tend downwards, its place being taken by the southern hemisphere."

Further, the views of two American authorities, whose opinion has recently been made available in connection with the Meat Trade Combination Commission, concur in this forecast. Referring to the relations between the American export trade and the United Kingdom market, the † first of these authorities says:—"In my judgment events point to a lessening export of our live stock products. Our population is increasing rapidly, our lands are advancing, labour is higher, and the cost of producing all kinds of food stuffs has gone up by leaps and bounds. In the last decade our people have made a vast advance in wealth and material comforts. They are essentially a meat-eating race, very extravagant in this direction, with no signs of a let-up: consequently I look for a decreasing business in exporting both dead and alive, and a keener demand at home."

The conclusion at which the ‡ second authority referred to arrives, after an extended discussion of the subject, is that the surplus animal products of the United States will probably not long continue to hold the position they now occupy in the markets of the United Kingdom.

Argentina, on the other hand, has been steadily increasing beef supplies to this country, and in 1908, with an import total of 3,600,000 cwts., exceeded for the first time the total American supply, both live and dead. Both the United States and Canada have for

* See article by Mr. R. H. Hooker, on the "Meat Supply of the United Kingdom," in the *Journal of the Royal Statistical Society* for June, 1909.

† See statement prepared by Mr. John Clay, Chicago, and published as Appendix V, p. 287, to the Evidence taken before the Meat Combinations Committee.

‡ See report on the recent conditions in the Beef Industry in the United States, prepared by Mr. George Young, Secretary in Charge of Commercial Affairs at Washington, and published as Appendix B to the Report of Meat Combinations Committee.

some years been sharing in the general tendency to decrease live stock importations (see Table I.). The following table illustrates this movement for the past five years :—

TABLE VI.
LIVE CATTLE AND SHEEP CONSIGNED FROM THE UNITED STATES AND CANADA,
1904-8.

Year.	Cattle.		Sheep.	
	United States.	Canada.	United States.	Canada.
1904,	390,672	157,176	271,437	101,202
1905,	399,440	164,184	136,092	42,244
1906,	384,834	174,742	69,009	29,471
1907,	351,186	119,028	67,860	35,209
1908,	259,700	122,086	46,000	30,385

Among the mutton supplying countries also the Sources of the advance of Argentina is a feature of note; thus in Mutton Supply. the years 1907 and 1908 the amount sent by the three chief contributing countries were :—

	New Zealand.		Argentine Republic.		Australia.	
	Cwts.		Cwts.		Cwts.	
1907,	2,005,078	.. ..	1,402,302	.. ..	858,226	
1908,	1,767,606	.. ..	1,556,746	.. ..	636,034	

According to the statistical inquiry by Mr. Hooker already referred to, there has been a general decline in the world's sheep stock since 1890, amounting to 7 per cent.; this, however, may not immediately affect the mutton supply to the United Kingdom, which so far as New Zealand is concerned has more than doubled itself in the period 1890-4 to 1907; the output from the Argentine also shows a steady development, while the Australian contributions, if marked by great fluctuations owing to the influence of drought losses and other causes, are in the main advancing. The following table shows the development of the trade by the three leading countries of supply and the present position of each :—

TABLE VII.
IMPORTS OF FROZEN MUTTON,* 1882-1908.

Period.	Total Imports.	Imports from Principal Countries.		
		New Zealand.	Argentine Republic.	Australia.
	Cwts.	Cwts.	Cwts.	Cwts.
Average 1882-4,	309,846	106,123	21,900†	42,242
" 1885-9,	844,499	418,669	258,920	44,064
" 1890-4,	1,857,189	864,098	488,782	248,894
" 1895-9,	3,091,978	1,268,566	934,612	625,183
" 1900-4,	3,634,416	1,654,556	1,329,423	317,621
1905,	3,811,069	1,524,981	1,462,537	505,413
1906,	4,082,756	1,748,188	1,433,097	616,870
1907,	4,578,523	2,005,078	1,402,302	858,226
1908,	4,391,259	1,737,606	1,556,746	636,034

* Including a small quantity of chilled and untreated mutton.

† Average for 1883 and 1884 only.

Regarding the supply of pork, the United States, with a pig population of 54,150,000, or 40 per cent. of the trade world total, still contributes the major portion. Since 1901, however, American supplies have been very markedly declining, and this tendency is emphasised by the increasing output of Denmark and Canada.

Changes in the Source of Pork Supplies.

The comparative quantities of *Bacon* sent yearly by these three leading countries of supply during the period 1901-1908 show this compensatory movement:—

TABLE VIII.
IMPORTS OF BACON, 1901-1908.

Year.	United States.	Denmark.	Canada.
	Cwts.	Cwts.	Cwts.
1901,	4,244,329	1,060,909	398,697
1902,	3,283,855	1,255,627	462,487
1903,	2,893,507	1,496,101	665,249
1904,	2,806,108	1,723,884	829,883
1905,	2,755,233	1,471,687	1,191,390
1906,	2,775,919	1,463,880	1,190,524
1907,	2,280,644	1,806,934	1,192,401
1908,	2,541,945	2,051,148	1,104,126

The trade in fresh pork continues more and more to be monopolised by Holland—a country which in 1908 contributed 884,004 cwts. out of a total supply of 572,222 cwts.

The various supplying countries for the leading forms of meat, it will thus be seen, can be conveniently grouped as follows:—

Beef: Argentina and North America,

Mutton: New Zealand, Argentina, and Australia.

Pig Meat: United States, Denmark, and Canada.

Turning from the consideration of the meat supply volume, to that of the fluctuations in price which the three **The World-wide** forms of meat show, the necessity for recognising **Nature of the** the wide and diverse origin of the supplies is **Market Reflected** apparent if the movements exhibited not only from **in Price** year to year, but even from month to month are **Fluctuations.** to be understood. The record of beef prices shows that high values prevailed from 1877 to 1883; then followed a period of depression most accentuated in 1887; from 1888 to 1890 an improvement set in which gave way to considerable fluctuations till 1908, when prices became still stronger and probably reached the highest level since 1902.

Since 1899 a high level of prices has been maintained even with an increasing foreign supply arriving each year; a shortage in the maize crop of 1907 in the States led to the decided rise in beef values which took place in 1908; the yield of this crop, which is so largely employed for cattle feeding in America, fell from 2,927 million bushels in 1906 to 2,592 million bushels in 1907; the result of this shortage was that a large number of cattle were sold off unduly early, and a concomitant period of financial depression hastened this movement. As a consequence of these two factors a great shrinkage in the numbers of cattle available for export followed, and with the lessened supplies arriving on the market, prices rose in sympathy with the maintained demand.

The fluctuations in the price of mutton for the two years, 1907 and 1908, were very marked. Values in 1906 had reached the highest level since 1890, but in 1907 **The Slump in** a sharp fall set in, and the depression still continues. This slump in mutton prices appears to **Mutton Prices,** have been accentuated by the fact that imports in **1908-1909.** 1908, though less than in 1907, were much heavier than those in 1906. A natural explanation for the market position is found in the increased proportion of the home flocks. Responsive to the high market rates in 1907, home owners increased their stocks; the same cause apparently attracted supplies from foreign sources which normally would have fallen off, and this, too, gave a further

drag down to an already weakened market. The case made for an over supply of sheep stock in the British Isles, as the direct cause of the fall in mutton values last year, appears to be to some extent true; but the recovery would have been quicker, and the fall, perhaps, lessened had foreign supplies, instead of increasing as prices drooped, slacked off in sympathy. The slump consequently appears to be an unavoidable outcome of modern supply conditions. The organised sources of supply cannot yet have a selection of markets, and the output must be cleared to keep production continuous. This is an aspect of the trade which promises badly for home producers, though circumstances are not unlikely to occur in which the latter may reap occasional benefit.

The prices of pig meat, *i.e.*, Bacon, Hams and Fresh Pork, have also shown marked fluctuations. With a serious falling off in the United States supply and, it is stated, a shrinkage in the number of Danish pigs, prices for pork have reached a very high level since the spring of the present year. How long this rise in value may continue must depend on the rate at

**The Present
Rise in Pork
Values.**

which supplies can be increased. The home stock of pigs dropped considerably in 1908, but as the numbers are capable of quick replacement, the stimulus of keen demand will effectively operate to make good the deficiency. In the future it is likely that a larger proportion than 48.1 per cent. of the total supply will be provided by home producers, unless Denmark has not yet reached its maximum capacity for production, and Canada pays still increasing attention to pork—a branch of stock farming in which, owing to climate, however, the latter country may not be so successful as the United States.

Taking a general view of the situation it is evident that an increase in pork production is likely to be manifested over Europe, more especially as the recent tendency has been to replace sheep by pigs. Should the decline

**The Possible
Trend of the
U.K. Meat
Market Supplies.**

in American beef supplies continue, Argentina may be confidently expected to more than make good the deficiency, while the possibilities of Canada in this direction, are as yet unknown. Greatly increased supplies of mutton can still be forwarded from New Zealand, Argentina, and Australia, and the growing population of the United Kingdom is likely to draw most of its surplus requirements in mutton from these distant sources in the southern

hemisphere. In the matter of pig meat production it is evident that the countries which are now likely to take the largest part in this branch of the meat supply are Canada and Denmark. But, while it is possible that Denmark may now be approaching the limits of her production for export in this line, the extent to which the Canadian Pork trade may develop is not easy to foresee. This will depend greatly on the progress of the dairying industry in that country; more dairying means more pigs, and if Canada advances in butter and cheese production, it is reasonable to conclude a concomitant increase will also be found in the quantities of pork available for export to the United Kingdom markets. The possibility of any considerable extension of the supply of pork from Denmark cannot be relied upon with much certainty (see Table VIII., p. 756). Unquestionably the general tendency in European countries at the present stage is to replace sheep by pigs, but to what extent Denmark can, or will, make this substitution, and to what extent in response to the inducement of an increasing market demand the present import of Bacon from this source can be increased, yet remain to be seen.

OFFICIAL DOCUMENTS.

I. AGRICULTURE.

Form A. 176 (a.)

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

FARM APPRENTICESHIPS.

AGRICULTURAL STATION, ATHENRY, COUNTY GALWAY.

Young men who intend to become farmers are admitted to the Station for one year, as apprentices, for a course of practical training in several branches of farming.

Apprentices are admitted without payment of any fee. They are required to take part in all the operations of the fields and of the farmyard. They must perform diligently all work assigned to them by the Farm Manager or his foreman. In winter, class-room instruction is provided in the evenings. This instruction is not intended as a preparation for any examination. It is of such a character as to continue the general education of the apprentices and be useful to them in their future career as farmers.

Applicants for apprenticeships must be not less than seventeen years of age on the date of making application, and each must give an undertaking that it is his intention to become a farmer in Ireland. He must also provide, in his application form, evidence of a sure prospect of obtaining a farm of his own, or *bond fide* occupation on a farm. Preference will be given to applicants from the province of Connaught. It will also be a recommendation if the applicant has attended a course of instruction held under the Department's Scheme of Winter Agricultural Classes or if he produces a certificate from an Itinerant Instructor in Agriculture that he has taken advantage of the Instructor's lectures and demonstrations and has shown a desire to improve his knowledge of tillage farming.

Applications for apprenticeships may be made at any period of the year. Apprentices will be admitted in the order of the receipt of their applications in the Department's offices. The Department do not guarantee admission to any applicant. An apprentice will not be retained at the station if he is found unable to perform a fair day's work or to be otherwise unsuitable.

On completion of twelve months at the Station, apprentices whose work has been done with care and diligence and to the satisfaction of the Farm Manager will receive small payments proportioned to the value of their work. In no case will such payment exceed £10.

OUTFIT.

Apprentices will be required to provide themselves with a proper outfit, particulars of which will be supplied to applicants on being notified of their admission.

A sum of £1 must be deposited with the Superintendent on entrance to cover the cost of repairs to clothes, the purchase of books, stationery, &c. The unexpended balance, if any, of this deposit will be refunded on the termination of the apprenticeship.

APPLICATIONS FOR ADMISSION.

Application for admission must be made on the prescribed form to be obtained from—

THE DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET,
DUBLIN.

Form A. 176 (b.)

DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND.

AGRICULTURAL EDUCATION FOR YOUNG MEN.

SESSION 1909-10.

FARM APPRENTICESHIPS.

AGRICULTURAL STATION, BALLYHAISE, CO. CAVAN.

Young men who intend to follow the farming profession and who desire to acquire a practical knowledge of its several branches are admitted to the Station as apprentices.

Applicants for apprenticeships must be not less than seventeen years of age on the 1st October, 1909, and each must give an undertaking that it is his intention to become a farmer in Ireland. He must also provide, in his application form, evidence of a sure prospect of obtaining a farm of his own, or *bonâ fide* occupation on a farm. Preference will be given to applicants from the province of Ulster, especially to those who have attended a course of instruction under the Department's Scheme of Winter Agricultural Classes. It will also be a recommendation if the applicant produces a certificate from the Itinerant Instructor in Agriculture for the County in which he

resides that he has taken advantage of the Instructor's lectures and demonstrations and has shown a desire to improve his knowledge of tillage farming.

The apprentices are required to reside in Ballyhaise House attached to the Station, where they are in the charge of a house master and matron. They must take part, as required, in all the work of the farm.

The Session will commence on the 6th October, 1909, and close on the 2nd September, 1910. It will be divided into two terms, viz., the Winter Term, from the opening of the Session to the 23rd March, 1910; and the Summer Term, from 6th April, 1910, to the close of the Session. Apprentices who are required at home for farm work during the spring and summer may leave the Station at the end of the Winter Term.

The course of training will include:—(1) classroom instruction in agricultural subjects which have a direct bearing on farming in Ireland; (2) instruction in subjects of a general educational nature, such as English, arithmetic, bookkeeping, &c., which will be useful to the apprentices in their future career as farmers; (3) practical instruction in all the work of the fields and farmyard in connection with the various seasonable operations and with permanent improvements; (4) lessons in veterinary hygiene and woodwork.

The Winter Term will be occupied principally with classroom instruction in agricultural and general subjects. The following subjects will be included in the agricultural course:—

Soils, tillages, manures (natural and artificial), seeds, grasses, weeds, treatment of pasture, cropping, management of live stock (including winter dairying), valuation of manures and feeding stuffs, elementary chain surveying, and elementary science, explanatory of the principles underlying ordinary farm practice.

The Summer Term will be given almost exclusively to practical training in the outdoor work of the farm.

Admission as an apprentice is conditional on passing the entrance examination, producing certificates of good health and character, and paying the required fee according to the scale indicated below.

Applicants who have been pupils at Winter Agricultural Classes will be exempted from the entrance examination provided their attendance and progress at the Agricultural Classes have been satisfactory.

ENTRANCE EXAMINATION.

Particulars as to the date of this examination and the place at which it will be held will be notified to each applicant.

The following subjects are included in the examination:—

Arithmetic—Simple calculations requiring a knowledge of weights and measures.

English—Dictation, Grammar and Composition.

The examination will be of such a nature as should present little difficulty to a young man who has passed the fifth standard at a National school.

No candidate will be admitted as an apprentice whose general education is too backward to admit of his taking advantage of the classroom instruction, or who is, in the opinion of the Department, unsuitable in any other respect for an apprenticeship.

No expenses will be allowed to candidates in connection with their attendance at this examination.

FEES.

1. For apprentices whose parents or guardians derive their means of living mainly from farming in Ireland the fees are proportional to the aggregate tenement valuation of their holdings, as follows:—

	Per Session.
Where the aggregate valuation does not exceed £20,...	£3
Exceeds £20 but does not exceed £40, ...	£6
Exceeds £40 but does not exceed £100, ...	£10
Exceeds £100, ...	£15

2. For apprentices not included in the foregoing classes, £20

These fees are in respect of the Winter Term. No additional fees are required from apprentices who are retained for the Summer Term.

Apprentices will be notified of the fees payable by them. Fees must be paid to the Superintendent on entrance, and in addition a sum of £1 must be deposited at the same time to cover the cost of repairs to clothes, the purchase of books, stationery, &c. The unexpended balance, if any, of this deposit will be refunded at the close of the Session.

FREE PLACES.

A small number of free places provided under the terms of the Anne Hall Bequest are available for applicants from the Counties of Fermanagh and Londonderry. Applications for these places must be addressed in the first instance to the Agricultural Superintendent, Royal Dublin Society, Leinster House, Dublin.

OUTFIT.

Apprentices will be required to provide themselves with a proper outfit, particulars of which will be supplied to the successful candidates.

APPLICATIONS FOR ADMISSION.

Application for admission must be made on the prescribed form to be obtained from—

THE DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION STREET, DUBLIN.

The applications will be dealt with in the order of their receipt in the Department's offices.

DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND,

UPPER MERRION STREET,
DUBLIN, 23rd June, 1909.

No. 12620/09.

BEE PEST PREVENTION (IRELAND) ACT, 1908,
AND
BEE PEST PREVENTION (IRELAND) REGULATIONS, 1909.

SIR,

I have to transmit, for the information of your Committee, the accompanying copy of the Regulations made by the Department in pursuance of the Bee Pest Prevention (Ireland) Act, 1908.

The Department desire to direct the attention of your Committee to Section 11 of the Act, which provides that the powers and duties of the Council of every County, other than a County Borough, under the Act shall be exercised and discharged by and through the County Committee of Agriculture. The responsibility of administering the Act in the rural districts of County——— devolves therefore upon your Committee.

The first matter to be considered is the appointment of officers for the purpose of the execution of the Act, and in this connection I have to acquaint you that the Department consider it desirable that the duties of Local Inspectors should be discharged by Mr.

the Horticultural Instructor employed by the Committee. It will be necessary for the Committee to pass a resolution on the lines of the accompanying draft A, giving the Instructor the authority provided for in Section 2 (1) of the Act. Mr.

should be furnished with a certified copy of this resolution. The only additional expense which this appointment will involve will be a small increase in the Instructor's travelling expenses.

Under Section 1 of the Act, any person who has bees affected or suspected of being affected with Foul Brood is bound under penalty to notify the fact to the Local Authority, and Clause 4 (a) of the Regulations prescribes that such notice shall be in writing addressed to the Executive Officer of the Local Authority, i.e., the Secretary of the County Committee of Agriculture.

On receiving in any manner notification of the existence, or supposed existence, of disease you should communicate with the Horticultural Instructor, who should visit the apiary in question as soon as practicable and furnish a report to the County Committee on the lines indicated in Clause 6 (1) of the Regulations. The Instructor should be advised to confine any recommendations as to treatment, which he may think it desirable to make, to the methods set out in detail in the Department's leaflet, No. 48. This leaflet is at present under revision.

No action should be taken on any such report until it has been submitted to, and considered by, the Committee, who, if they

approve of the recommendations made by the Instructor, should direct that a Notice be served on the bee-keeper requiring him to adopt such measures as are recommended in the Instructor's report. The Notice must be in the form set out in the Schedule to the Regulations, and may be signed either by the Secretary to the County Committee or by the Instructor, as the Committee may decide. It is suggested, however, that these notices should be signed by the Secretary only, who should be formally appointed by resolution of the Committee as executive officer under Section 9 of the Act. The resolution in this case should be on the lines of attached draft B.

In counties in which provision has been made for the payment of compensation to bee-keepers for bees, articles and appliances destroyed in pursuance of Notices served on them under the Act, the County Committee will have at the outset to fix a scale of compensation at a rate not exceeding that laid down in Clause 10 of the Regulations. When considering claims for compensation the Committee should have special regard to the reports submitted by the Instructors in the first instance, and should satisfy themselves that the Notices issued by their direction have been duly complied with in every respect.

Application for the Department's sanction to each payment in respect of compensation should be made on Form A. 140, and should be accompanied by all the documents relating to the case. Payment cannot be made in any instance in anticipation of such sanction.

It will be necessary for you to keep accurate records of all cases of Foul Brood reported in the County, in order that you may be in a position to furnish the Department in due course with the returns required by Clause 12 of the Regulations.

I have to add that further copies of the Regulations may be had free of charge on application to the Department, and that copies of the Bee Pest Prevention (Ireland) Act, 1908, may be procured from Mr. E. Ponsonby, 116 Grafton Street, Dublin, price 1d. each, postage extra.

I am, Sir,

Your obedient Servant,

T. P. GILL,

The Secretary,

Secretary.

County Committee of Agriculture.

A.

We, the Committee appointed by the County Council of
for the purpose of Part I. of the Agriculture and
Technical Instruction (Ireland) Act, 1899, do hereby authorise
Mr.

of

in the County of

reasonable times to enter any premises within the District of the
said County Council where Bees are kept, and to inspect any Bees
and articles and appliances used in connection with Bee-keeping
therein.

at all

B.

We, the Committee appointed by the County Council of the County of _____ for the purposes of Part I. of the Agriculture and Technical Instruction (Ireland) Act, 1899, with the consent of the Department of Agriculture and Technical Instruction for Ireland, do hereby appoint Mr. _____ of _____ in the County of _____ an Officer for the purpose of the execution of the Bee Pest Prevention (Ireland) Act, 1908, within the District of the County Council of the said County.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

BEE PEST PREVENTION (IRELAND) REGULATIONS, 1909.

Dated, 3rd June, 1909.

The Department of Agriculture and Technical Instruction for Ireland, in pursuance of the Bee Pest Prevention (Ireland) Act, 1908, hereby make the following Regulations:—

Short Title.

1. These Regulations may be cited as the Bee Pest Prevention (Ireland) Regulations, 1909.

Commencement.

2. These Regulations shall take effect on the date hereof, and shall remain in force until altered or revoked by the Department.

Definitions.

3. In these Regulations—

- “Bee-keeper” means a person who owns, keeps, or has charge of bees, articles, or appliances used in connection with bee-keeping.
- “Premises” means the entire of the holding or place on which the bees are kept.
- “Stock” means the living bee population of a hive with its brood.
- “Hive” means a hive, together with all articles and fittings therein and coverings thereon.
- “Articles” includes wax and honey.
- “Diseased Hive or Stock” means a hive or stock, the bees, brood, or comb of which in the opinion of the Inspector is affected in any way by Foul Brood.
- “Destruction” means destruction by burning.
- “Reasonable times” means any time from the 1st of April to 31st October inclusive, when bees are flying on the premises to be inspected or in apiaries, if any, on other premises in the district, and when the weather conditions are favourable.

“ Executive Officer of the Local Authority ” means, in the case of a County Borough or an Urban District, the Town Clerk or Clerk of such County Borough or Urban District; and in all other cases, the Secretary of the County Committee of Agriculture.

“ Inspector ” means an officer of the Department or of the Local Authority duly authorised under Section 2 (1) of the Act.

Other expressions have the same respective meanings as in the Act.

Manner in which Notices are to be given.

4. (a.) The notice required by Section 1 of the Act to be given by a bee-keeper shall be in writing, signed by the bee-keeper, and addressed by him to the Executive Officer of the Local Authority.

(b.) The notice referred to in Section 3 (2) of the Act shall be in writing, signed by the Executive Officer of the Local Authority or by an Inspector.

5. A notice shall be deemed to have been served on a person if it is delivered to him personally, or left for him at his last known place of abode or business, or sent through the post in a letter addressed to him there; and a notice or other document purporting to be signed, as provided above, shall be *prima facie* evidence that it was so signed and duly authorised by the Department or by the Local Authority, as the case may be.

Measures for Preventing Spread of Disease.

6. (1.) On entering any premises in which bees are kept, the Inspector may take such steps as in his opinion may be necessary to determine whether the disease exists or has recently existed on said premises, and shall, without delay, forward to the Department or to the Local Authority, as the case may be, a report on the facts of the case. If Foul Brood is found to exist on the premises inspected, the report shall contain a short and concise statement of the method of treatment, if any, which the Inspector recommends should be carried out by the bee-keeper. If the Inspector in his report advises destruction, he shall also state, approximately, the amount, if any, payable in accordance with the scale of compensation, if any, adopted by the Local Authority.

(2) (a.) The Local Authority shall decide as to the action to be taken in each case reported by their Inspector, and shall cause to be served on the bee-keeper, either by their Executive Officer or by the Inspector, a notice in the Form A set out in the Schedule, or as near thereto, as practicable, requiring him to carry out within three days from the date of such notice the measures for cleaning, disinfection, and destruction specified therein.

(b) The Department may cause a like notice to be served in cases reported by their Inspector.

(3.) The bee-keeper shall notify in writing to the Local Authority or to the Department, as the case may be, the date on which he complied with the requirements of said notice.

7. The Inspector shall take all reasonable precautions to prevent the disease being carried by him from an infected apiary to another apiary, whether infected or not.

8. If the bee-keeper so desires, the Inspector, when inspecting an apiary, shall permit the bee-keeper to manipulate the stocks to be dealt with, provided that the bee-keeper acts in all respects to the Inspector's satisfaction.

9. If necessary for the proper examination of comb in a fixed comb hive, the Inspector may cut out a portion of the brood comb.

Scale of Compensation.

10. Compensation for the destruction of bees, articles, and appliances may be allowed by a Local Authority at a rate not exceeding the following:—

For a stock in
a movable frame
hive.

One shilling in respect of each frame
which in the Inspector's opinion is well
covered with bees, subject to a maximum of
five shillings.

For a stock in a
fixed comb hive.

Two shillings and sixpence.

For a movable
frame hive.

Five shillings.

Making and Determination of Claims.

11. (a.) Any bee-keeper whose bees, articles, and appliances have been destroyed under these regulations, and who has complied in every respect with the Notice served on him may claim compensation for such destruction from the Local Authority, provided such Local Authority has adopted the resolution referred to in Section 6 (3) of the Act. The claim shall be made in writing within fourteen days following the date of the said Notice, and shall contain particulars of the items in respect of which compensation is claimed and the amount of such compensation for each item.

(b.) The said Local Authority, which has adopted the resolution above-mentioned, shall take such claim into consideration at the earliest date practicable and shall, subject to these regulations, decide as to the amount of compensation.

(c.) Compensation shall not in any case be paid by a Local Authority until after receipt of the written direction of the Department for payment and their written sanction to the amount proposed to be paid.

Annual Returns.

12. Not later than the 14th day of October in each year the Local Authority shall forward to the Department a return, in the Form B. set out in the Schedule, of all cases reported to them under the Act within the twelve months ended the 30th day of September previous.

IN WITNESS WHEREOF the Department of Agriculture and Technical Instruction for Ireland have hereunto set their Official Seal this Third day of June, One Thousand Nine Hundred and Nine.

L.S.

T. P. GILL,
Secretary.

SCHEDULE.

Form A.

BEE PEST PREVENTION (IRELAND) ACT, 1908,
 AND
 BEE PEST PREVENTION (IRELAND) REGULATIONS,
 1909.

Date.....

SIR,

You are hereby required within three days from the date of this Notice to carry out the measures specified hereunder for the cleaning, disinfection, and destruction of the bees, articles, and appliances referred to below.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

* Here insert details of measures to be adopted, and bees, articles, etc., to be destroyed.

You are further required to notify†.....

† Here insert "the Local Authority for ——" or "the Department" as the case may be.

as to the date on which you have complied with the conditions of this Notice.

(Signed).....

‡ Signatory should describe himself as "Executive Officer (or Inspector) of the Local Authority for ——," or "Inspector of the Department," as the case may be.

To

Mr.....

.....

Form B.

SCHEDULE—continued.

BEE PEST PREVENTION (IRELAND) ACT, 1906,

AND

BEE PEST PREVENTION (IRELAND) REGULATIONS, 1909.

County
County Borough }
of
Urban District }

RETURN of cases of Foul Brood reported upon during the Twelve
Months ended 30th September, 19 .

Name and Address of Bee Keeper	Date of re- ceipt of No- tification	Date of visit by Inspector	Date of issue of Notice under Section 3 (2)	Date of com- pliance with Notice	Amount of Compensation (if any), and date paid

(Signed)_____

Executive Officer.

Date_____day of_____, 19_____

DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND.

MARKETING OF EGGS.

MEMORANDUM TO PRODUCERS.

Nearly all the eggs exported from Ireland are sent to Great Britain. Other egg-producing countries are continually striving to get a larger share of the trade in eggs to that market.

The quality of Irish eggs, when at their best, is admitted to be as good as that of any and better than that of most eggs, imported into Great Britain.

The two chief causes for complaint concerning Irish eggs are:— (1) want of cleanliness, and (2) staleness. The foreign producer, by supplying clean eggs, has raised the standard of cleanliness of eggs demanded by the British public; hence, cleaner eggs are required by, and must be supplied to, the trade in Great Britain if the best prices are to be obtained. Foreign competition is most keenly felt when the home supply of eggs is falling off, and prices are rising. If Irish eggs are held over at this period, it is certain the foreign eggs will be taken in preference; hence, producers should never hold over eggs, as the practice of doing so is one of the most certain ways of causing Irish eggs to lose their position on British markets, and, therefore, to depreciate in value.

Irish egg producers should pay the strictest attention to the following recommendations:—

1. Provide clean and dry hay, straw, bracken, or other suitable material for the nests, renew the material frequently, and always whenever it becomes wet or soiled.

2. Collect eggs at least once daily, shortly before noon; or, preferably, twice daily, at noon and dusk. It is especially advisable when hens are broody (clucking) to collect twice daily. On no account should eggs which have been found by chance in nests in the open, during harvest, or at other times, be mixed with those intended for market; any such eggs which are fit for consumption, should be used at home.

3. Any dirt which is on the egg when it is collected should be at once removed by means of a dry cloth; or if that method fails, a slightly dampened, but not wet, cloth may be used. Do not wash hen eggs, nor put them in water, nor use any chemical to remove dirt.

4. Keep eggs in a cool, dry place, free from objectionable odours.

5. Reserve the smallest eggs for home consumption, and market the best and largest.

6. Put clean, dry hay or straw in the basket or box used for taking eggs to market; never use green grass for this purpose.

7. Eggs should always be kept dry. Contact with wet material, or exposure to moisture or rain, causes them to go bad quickly; therefore, eggs when taken to market should be protected from wet by a suitable rainproof covering.

8. Sell clean eggs to the buyer who pays more for clean than for dirty eggs.

9. Preserved eggs *must not* be sold as fresh eggs: it is fraudulent to do so.

10. Eggs should be marketed regularly, at least once a week, and oftener if circumstances permit.

It is recommended that producers should, where possible, sell hen eggs to traders who buy by weight, viz., at per lb. weight of eggs instead of to those who buy by count, viz., at per dozen, score, or 120. Selling by weight ensures that the producer shall get full value for large eggs. The British buyer generally buys eggs graded to weight, and pays the best price for the larger sizes.

The producer must bear in mind that, although the position which Irish eggs hold in British markets has greatly improved in recent years, and that the value of eggs imported by Great Britain from Ireland is greater than that of its egg imports from any other country, this position is mainly due to the good quality of the best Irish eggs, and to recent improvements effected in production, packing, grading and handling. It must also be remembered that the countries competing with Ireland in the egg market are continuously improving their methods of production and handling, that competition with these other sources of supply becomes keener year by year, and that it is only by promptly remedying ascertained faulty methods that Ireland can hope to maintain its present position. It is certain that in Great Britain there is a steadily increasing demand for the best Irish eggs, fresh, clean, and well handled. The supply of such eggs is far from equal to the demand, and the demand for clean, fresh eggs cannot be supplied by stale, dirty and badly-handled eggs. Furthermore, the Irish egg producer cannot hope to improve his position materially until Irish eggs are brought to market fresh and clean.

JUNE, 1909.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

PURCHASE OF HEN EGGS BY WEIGHT.

9298/'09.

New laid eggs, weighing preferably not less than 16 lbs. per hhd., are always in great demand on British markets, and good prices can undoubtedly be obtained for eggs of this description provided they are graded to stated weights per hhd.

It should be the aim of Irish producers to supply eggs weighing not less than 15 and preferably 16 lbs. per hhd. to meet this demand; but, owing to the practice prevalent throughout Ireland of buying eggs by count, producers are inclined to reserve large eggs for home consumption and to market the small ones, since, under this system, small eggs bring in as good a return as large ones. Another fault of this system is that the buyer who purchases by count must frequently, if not always, pays too much for small eggs, and too little for large ones.

Owing to the difficulty experienced by Irish shippers in obtaining eggs averaging $15\frac{1}{2}$ lbs. per hhd. all round, and on account of the large number of small-sized eggs bought, it is a common practice to mix in one case eggs of 16 lbs. per hhd. and upwards with those of 14 lbs. per hhd. and under in order to produce an average weight of 15 or $15\frac{1}{2}$ lbs. per hhd. Such loose grading is strongly objected to by British buyers, and is detrimental to the interests of Irish shippers and producers.

In this connection the Department desire to bring under the notice of buyers the two tables enclosed herewith. Table A indicates the weights of any given number of eggs from 12 to 60, calculated on bases of from 13 to 18 lbs. per hhd. This table will demonstrate to producers the advantage of producing large eggs if they can be sold by weight.

Table B indicates in column 3 the average weekly prices of eggs at certain specified markets in 1907, compiled from actual transactions reported to the Department, and in column 4 the corresponding prices per lb. based on the assumption that the eggs in question averaged 15 lbs. per hhd. It also shows, in columns 5 to 9, the prices for each week at other weights per hhd., calculated at the price per lb. shown in column 4.

It is suggested that buyers should give careful consideration to this question, and especially that they should take some of their own transactions for periods in which prices corresponded with those given in Table B, work them out on the basis of purchase by weight, and note results.

If the system of purchasing eggs by weight were generally adopted there would be a direct inducement to producers to reserve small eggs for home consumption and to market the larger ones, and, by careful selection of the poultry, to gradually increase the average size of eggs produced. This has been the result in those districts where the purchase of eggs by weight has been steadily carried on for some years.

For the purposes of purchasing by weight, it is generally found convenient to use a spring balance weighing machine, fitted with a large dial indicating weights up to about 40 lbs., and supplied with two pans or trays for holding eggs that are being weighed.

TABLE A.

No. of Eggs.	WEIGHTS PER HHD.											
	13 lbs.		14 lbs.		15 lbs.		16 lbs.		17 lbs.		18 lbs.	
	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.	lbs.	ozs.
6	-	10½	-	11	-	12	-	13	-	13½	-	14½
12	1	5	1	6	1	8	1	10	1	11	1	13
13	1	6½	1	8	1	10	1	12	1	13½	1	15½
14	1	8	1	10	1	12	1	14	1	15½	1	17½
15	1	10	1	12	1	14	2	0	2	2	2	4
16	1	11½	1	14	2	0	2	2	2	4	2	6½
17	1	13½	2	0	2	2	2	4½	2	6½	2	9
18	1	15	2	1½	2	4	2	6½	2	9	2	11
19	2	1	2	3½	2	6	2	8½	2	11	2	13½
20	2	2½	2	5½	2	8	2	10½	2	13½	3	0
21	2	4½	2	7	2	10	2	13	3	0	3	2½
22	2	6	2	9	2	12	2	15	3	2	3	5
23	2	8	2	11	2	14	3	1	3	4	3	7
24	2	10	2	13	3	0	3	3	3	6	3	10
25	2	11½	2	14½	3	2	3	5½	3	8½	3	12
26	2	13	3	0½	3	4	3	7½	3	11	3	14
27	2	15	3	2	3	6	3	10	3	13	4	1
28	3	0½	3	4	3	8	3	12	3	15	4	3
29	3	2	3	6	3	10	3	14	4	1½	4	5½
30	3	4	3	8	3	12	4	0	4	4	4	8
31	3	6	3	10	3	14	4	2	4	6	4	10
32	3	7½	3	12	4	0	4	4	4	9	4	13
33	3	9	3	14	4	2	4	6	4	11	4	15
34	3	10½	3	15½	4	4	4	9	4	13	5	2
35	3	12	4	1	4	6	4	11	4	15	5	4
36	3	14	4	3	4	8	4	13	5	2	5	6
37	4	0	4	5	4	10	4	15	5	4	5	9
38	4	2	4	7	4	12	5	1	5	6	5	11
39	4	3½	4	9	4	14	5	3	5	8	5	14
40	4	5	4	11	5	0	5	5	5	11	6	0
41	4	7	4	13	5	2	5	7	5	13	6	2
42	4	9	4	14	5	4	5	9	5	15	6	5
43	4	10½	5	0	5	6	5	12	6	1	6	7
44	4	12	5	2	5	8	5	14	6	4	6	10
45	4	14	5	4	5	10	6	0	6	6	6	12
46	5	1	5	6	5	12	6	2	6	8	6	14
47	5	1½	5	8	5	14	6	4	6	11	7	1
48	5	3	5	10	6	0	6	6	6	13	7	3
49	5	5	5	11	6	2	6	9	6	15	7	6
50	5	6½	5	13	6	4	6	11	7	1	7	8
51	5	8	5	15	6	6	6	13	7	4	7	10
52	5	10	6	1	6	8	6	15	7	6	7	13
53	5	12	6	3	6	10	7	1	7	8	7	15
54	5	13½	6	5	6	12	7	3	7	10	8	2
55	5	15	6	7	6	14	7	5	7	13	8	4
56	6	1	6	9	7	0	7	7	7	15	8	6
57	6	3	6	10	7	2	7	10	8	1	8	9
58	6	4½	6	12	7	4	7	12	8	3	8	11
59	6	6	6	14	7	6	7	14	8	6	8	14
60	6	8	7	0	7	8	8	0	8	8	9	0

TABLE B.

TRANSACTIONS in Eggs during 1907 at Waterford, Cork, Limerick, Sligo, Galway, and Dublin
Markets, reported to the Department.

Week ending	No. of hhds. reported on	Price per hhd.	Price per lb. corres- ponding to price per hhd. in col. 3, assuming that eggs weighed 15 lbs. per hhd.	Price per hhd. at price per lb. given in col. 4 ; calculated to nearest $\frac{1}{4}$ d.				
				13 lbs.	14 lbs.	16 lbs.	17 lbs.	18 lbs.
				per hhd.	per hhd.	per hhd.	per hhd.	per hhd.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
January	5	2,334	12 11 $\frac{1}{2}$	10 $\frac{1}{2}$	11 1	11 11	13 8	14 6
"	12	2,257	12 6 $\frac{1}{2}$	10	10 10	11 8	13 4	14 2
"	19	3,332	11 10 $\frac{1}{2}$	9 $\frac{1}{2}$	10 3 $\frac{1}{2}$	11 1	12 8	13 5 $\frac{1}{2}$
"	26	2,977	11 7 $\frac{1}{2}$	9 $\frac{1}{2}$	10 0	10 9 $\frac{1}{2}$	12 4	13 1
February	2	5,883	11 5 $\frac{1}{2}$	9	9 9	10 6	12 0	12 9
"	9	6,391	10 4 $\frac{1}{2}$	8 $\frac{1}{2}$	8 11	9 7 $\frac{1}{2}$	11 0	11 8
"	16	6,856	9 5 $\frac{1}{2}$	7 $\frac{1}{2}$	8 1 $\frac{1}{2}$	8 9	10 0	10 7 $\frac{1}{2}$
"	23	8,978	9 11	8	8 8	9 4	10 8	11 4
March	2	9,435	9 11 $\frac{1}{2}$	8	8 8	9 4	10 8	11 4
"	9	9,631	9 2	7 $\frac{1}{2}$	7 10	8 5 $\frac{1}{2}$	9 8	10 3
"	16	11,727	8 11 $\frac{1}{2}$	6 $\frac{1}{2}$	7 7	7 7	8 8	9 2 $\frac{1}{2}$
"	23	14,272	6 11 $\frac{1}{2}$	5 $\frac{1}{2}$	5 11 $\frac{1}{2}$	6 5	7 4	7 9
"	30	13,151	6 10	5 $\frac{1}{2}$	5 11 $\frac{1}{2}$	6 5	7 4	7 9 $\frac{1}{2}$
April	6	12,227	6 7 $\frac{1}{2}$	5 $\frac{1}{2}$	5 8	6 1 $\frac{1}{2}$	7 0	7 5
"	13	14,336	6 10	5 $\frac{1}{2}$	5 11 $\frac{1}{2}$	6 5	7 4	7 9 $\frac{1}{2}$
"	20	13,139	6 11 $\frac{1}{2}$	5 $\frac{1}{2}$	5 11 $\frac{1}{2}$	6 5	7 4	7 9 $\frac{1}{2}$
"	27	14,255	6 8 $\frac{1}{2}$	5 $\frac{1}{2}$	5 8	6 1 $\frac{1}{2}$	7 0	7 5
May	4	13,546	7 0	5 $\frac{1}{2}$	5 11 $\frac{1}{2}$	6 5	7 4	7 9 $\frac{1}{2}$
"	11	10,429	6 9 $\frac{1}{2}$	5 $\frac{1}{2}$	5 11 $\frac{1}{2}$	6 5	7 4	7 9 $\frac{1}{2}$
"	18	10,658	6 10 $\frac{1}{2}$	5 $\frac{1}{2}$	5 11 $\frac{1}{2}$	6 5	7 4	7 9 $\frac{1}{2}$
"	25	9,395	6 8 $\frac{1}{2}$	5 $\frac{1}{2}$	5 8	6 1 $\frac{1}{2}$	7 0	7 5
June	1	9,180	6 8 $\frac{1}{2}$	5 $\frac{1}{2}$	5 8	6 1 $\frac{1}{2}$	7 0	7 5
"	8	8,418	6 10 $\frac{1}{2}$	5 $\frac{1}{2}$	5 11 $\frac{1}{2}$	6 5	7 4	7 9 $\frac{1}{2}$
"	15	9,386	7 0	5 $\frac{1}{2}$	5 11 $\frac{1}{2}$	6 5	7 4	7 9 $\frac{1}{2}$
"	22	7,999	7 0 $\frac{1}{2}$	5 $\frac{1}{2}$	5 11 $\frac{1}{2}$	6 5	7 4	7 9 $\frac{1}{2}$
"	29	8,430	7 1	5 $\frac{1}{2}$	6 3	6 8 $\frac{1}{2}$	7 8	8 2
July	6	8,055	7 1 $\frac{1}{2}$	5 $\frac{1}{2}$	6 3	6 8 $\frac{1}{2}$	7 8	8 2
"	13	7,261	7 2	5 $\frac{1}{2}$	6 3	6 8 $\frac{1}{2}$	7 8	8 2
"	20	7,434	7 4 $\frac{1}{2}$	5 $\frac{1}{2}$	6 3	6 8 $\frac{1}{2}$	7 8	8 2
"	27	7,670	7 5 $\frac{1}{2}$	6	6 6	7 0	8 0	8 6
August	3	7,822	7 5 $\frac{1}{2}$	6	6 6	7 0	8 0	8 6
"	10	5,577	7 10 $\frac{1}{2}$	6 $\frac{1}{2}$	6 9	7 3 $\frac{1}{2}$	8 4	8 10
"	17	6,256	8 3	7 $\frac{1}{2}$	7 7	7 7	8 8	9 2 $\frac{1}{2}$
"	24	5,088	8 8 $\frac{1}{2}$	7	7 7	8 2	9 4	9 11
"	31	6,072	8 11 $\frac{1}{2}$	7 $\frac{1}{2}$	7 7	8 2	9 4	9 11
September	7	4,617	9 1 $\frac{1}{2}$	7 $\frac{1}{2}$	7 10	8 5 $\frac{1}{2}$	9 8	10 3
"	14	5,441	9 5 $\frac{1}{2}$	7 $\frac{1}{2}$	8 1 $\frac{1}{2}$	8 9	10 0	10 7
"	21	4,877	9 8 $\frac{1}{2}$	7 $\frac{1}{2}$	8 5 $\frac{1}{2}$	9 0	10 4	11 0
"	28	4,077	9 10 $\frac{1}{2}$	8	8 8	9 4	10 8	11 4
October	5	4,324	10 9	8 $\frac{1}{2}$	9 2 $\frac{1}{2}$	9 11	11 4	12 0
"	12	4,672	11 0	8 $\frac{1}{2}$	9 6	10 2 $\frac{1}{2}$	11 8	12 5
"	19	3,907	11 4 $\frac{1}{2}$	9	9 9	10 6	12 0	12 9
"	26	3,459	11 8	9 $\frac{1}{2}$	10 0	10 9 $\frac{1}{2}$	12 4	13 1
November	2	2,651	11 11 $\frac{1}{2}$	10 $\frac{1}{2}$	10 3 $\frac{1}{2}$	11 1	12 8	13 5 $\frac{1}{2}$
"	9	2,323	12 7 $\frac{1}{2}$	10	10 10	11 8	13 4	14 2
"	16	2,689	13 0 $\frac{1}{2}$	10 $\frac{1}{2}$	11 1	11 11 $\frac{1}{2}$	13 8	14 6
"	23	1,982	13 4 $\frac{1}{2}$	10 $\frac{1}{2}$	11 8	12 6 $\frac{1}{2}$	14 4	15 3
"	30	2,064	13 6 $\frac{1}{2}$	10 $\frac{1}{2}$	11 8	12 6 $\frac{1}{2}$	14 4	15 3
December	7	1,929	13 7 $\frac{1}{2}$	11	11 11	12 10	14 8	15 7
"	14	2,317	13 9	11	11 11	12 10	14 8	15 7
"	21	2,439	13 0 $\frac{1}{2}$	10 $\frac{1}{2}$	11 1	11 11 $\frac{1}{2}$	13 8	14 6
"	28	2,278	12 8 $\frac{1}{2}$	10	10 10	11 8	13 4	14 2

II. TECHNICAL INSTRUCTION.**CIRCULAR 64.**

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET, DUBLIN,

April, 1909.

SIR or MADAM,

I have to enclose herewith a copy of the Department's Programme of Experimental Science, Drawing, Manual Instruction, and Domestic Economy for Day Secondary Schools for the session 1908-9, and to inform you that the regulations set forth in this publication will not be materially altered for the coming school session.

Attention is directed to the official calendar affixed to the Programme, from which it will be observed that if the Managers desire the above named school to be admitted to the list of schools working for grants under the conditions of the regulations during the academic year 1909-10, application must be made by the 1st May next.

Copies of the form of application (S.44a.) may be obtained from the Offices of the Department.

I am,

Sir or Madam,

Your obedient Servant,

T. P. GILL,

Secretary.

CIRCULAR 65.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET, DUBLIN,

May, 1909.

SIR,

In regard to the special classes in elementary experimental science and domestic economy for national school teachers, which may be conducted under the terms of the circular letters (Nos. 59 and 60) issued from these Offices in December last, I have to inform you that the attention of the Department has been drawn by the Commissioners of National Education to difficulties which have arisen, in connection with the payment of the expenses of teachers attending such classes, through the failure of teachers to obtain the Commissioners' approval for their attendance.

The Department will, therefore, be glad if, in future, when making preparations for these classes, by advertisements and otherwise, your Committee will be good enough to point out to the teachers, who may purpose to attend, the necessity for securing the previous authorisation of the Commissioners, if application for a refund of expenses is contemplated.

I am, Sir,

Your obedient Servant,

T. P. GILL,

Secretary.

To the Secretary
of the Committee named in the Address.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET, DUBLIN,
May, 1909.

SIR,

With reference to the classes conducted at the above-named School during the current academic year under the conditions of Sections I. and II. of the Regulations for Technical Schools and Science and Art Schools and Classes, I have to point out that, under the terms of Sections I. 2 and II. 5, it will be necessary to satisfy the Department's Inspector in regard to the general education and training of the students in respect of whom it is intended to claim grants. Attention is also directed to the concluding paragraph of the circular letter (No. 58) issued from these Offices in November last, which requires the production of *documentary* evidence in regard to the standard attained by each student.

The Department are of opinion that an examination of the documents to be submitted by the Managers in this connection could best be made by the Inspector when the claim for the school session has been compiled on Form S. 68 and its Fly-leaves, and it is therefore requested that you will be good enough to have the claim completed and totalled *at as early a date as possible*.

The Department's Inspector of Technical Instruction for the District will arrange to visit the school upon learning from you the date by which you will have ready for examination the completed claim, and all documents, including the marked papers worked by the students at the entrance examination, which the Managers may wish to submit.

I am, Sir,
Your obedient Servant,
T. P. GILL,
Secretary.

CIRCULAR 67.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET, DUBLIN,
14th June, 1909.

SIR or MADAM,

I have to request your attention to the returns required to be furnished on Forms S. 121 (copies of which are already in your possession), respecting the students presenting the courses of the Department's Programme for Day Secondary Schools for the purposes of the examinations of the Intermediate Education Board for Ireland. As the work of notifying the results of these examinations is expedited by the early receipt in the Offices of the Department of the particulars supplied by the Managers of Schools on the forms in question, it is requested that the returns from the above-named school may be completed and despatched as soon as possible.

I am,
Sir or Madam,
Your obedient Servant,
T. P. GILL,
Secretary.

PROGRAMME OF EXPERIMENTAL SCIENCE, DRAWING,
MANUAL INSTRUCTION AND DOMESTIC ECONOMY
FOR DAY SECONDARY SCHOOLS.

I.—EXPLANATORY CIRCULAR TO MANAGERS AND
PRINCIPALS OF DAY SECONDARY SCHOOLS.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET, DUBLIN,

July, 1909.

SIR or MADAM,

The Regulations for the teaching of Experimental Science, Drawing, Manual Instruction, and Domestic Economy in Day Secondary Schools, which were in operation during the academic year 1908-9, will continue in force, without alteration, during the year 1909-10.

The Syllabuses of the courses of instruction, as well as the Prefatory Note to the Syllabuses in Experimental Science, may be obtained separately for general distribution among teachers.

The Department have observed that in previous years it has been a practice in some schools to allow students under twelve years of age to attend instruction in the First Year Syllabuses of the Preliminary Course. Such students have then, in the following Session, been permitted to enter the classes following the Second Year Syllabuses, and grants have been claimed upon the instruction afforded at the rates appropriate to the Second Year. The Department are of opinion that, as a rule, students under twelve years of age are not capable of taking full advantage of instruction in the First Year Syllabuses, and they will therefore require that, in future, students attending classes in the First Year Syllabuses, before completing their twelfth year, shall repeat those Syllabuses before proceeding to the Course for the Second Year.

In regard to the cases of pupils who may, under Regulation II. 6, be working a second time through any Syllabus of the Programme, attention is again directed to the fact that pupils who are capable of profiting by promotion to a higher course should not be permitted to repeat the previous year's course. The Department will withhold grants in respect of instruction given to pupils who may repeat the course of any year if, in the opinion of the Inspector, those pupils had made such progress as would enable them to take, with advantage, the work prescribed for the subsequent year, and in no case will pupils who were presented to the Department's Inspectors for the practical test for Honours candidates, in connection with the examinations of the Intermediate Education Board for Ireland, be accepted for grants on account of a repetition of the same course. As soon as the Managers have decided on the arrangements to be made for the classes to be held during the session, the names of all pupils who propose to work a second time through one of the Syllabuses of the

Programme should be notified to these Offices on Form S. 256, in order that the Department's decision in regard to the payment or otherwise of grants in each case may be issued to the Managers at the beginning of the school session.

The efficiency of the instruction will, as hitherto, be tested by inspection, as a rule without notice. During the latter part of the school session, however, notice will be given of a visit of Special Inspection for that session. At all visits it will be within the discretion of the Inspector to test any or all of the classes by practical exercises in the laboratory, or by *viva voce* examination of classes or of individuals, or by written examinations, or by a combination of these methods. It should be observed that the rates of payment may be increased by one-tenth or reduced by one or more tenths, as the Department, on consideration of the Inspector's report, may determine. Reduction by more tenths than one will be exceptional. In cases in which such exceptional treatment is necessary, the Department will in all probability adopt the alternative of giving a reasonable warning, and, unless marked improvement follows, will remove such a school from the list of those aided by the system of grants.

The qualifications required of teachers are set out in Circulars 16, 23, 24, and 25. The Department reserve the right to withdraw recognition of a teacher's qualifications should circumstances occur to render such a course desirable.

Summer Courses for Teachers will be continued as heretofore, but it is hoped that they will shortly have satisfied the need of qualifying teachers, and will develop into "Post Graduate" Courses on special subjects for those already qualified. *The Special Course in Physics of the Department's Programme for Day Secondary Schools now comprises three Syllabuses. The first is a Third Year Course in General Physics and Heat, to which Magnetism and Electricity may be added if School Managers desire. The remaining Syllabuses are both Fourth Year Courses, either of which may be taken at the option of School Managers. The first of these Syllabuses (Course A.) deals with Wave Motion, Sound, and Light, and Radiant Heat. The subject of the second Syllabus (Course B.) is Electricity and Magnetism. Teachers who desire to secure the Irish Secondary Teachers' Certificate in Physics, under the conditions set out at Section I. 2 (page 17) of Circular 23, will be required to successfully attend five Summer, or Special Courses of instruction. Two of these courses must be in the First and Second Year Syllabuses of the Preliminary Course, and three in the three Syllabuses comprised in the Special Course in Physics. Teachers taking out this certificate will be admitted to a course in Laboratory Arts as a Sixth Year Course, but attendance at a course in Laboratory Arts will not be accepted in lieu of successful attendance at a course in any one of the three Syllabuses of the Special Course in Physics. These regulations will not apply to teachers who have, previous to the 1st July, 1909, secured provisional recognition as teachers of the Third Year Syllabus of the Special Course in Physics. Such teachers may secure the Irish Secondary Teachers' Certificate by successfully attending a Summer Course in Electricity and Magnetism and a course in Laboratory Arts, or by*

successfully attending a Summer Course in Electricity and Magnetism and repeating any one of the Syllabuses of the special Course in Physica.

The details of the arrangements by which schools and pupils may obtain recognition under the regulations of the Intermediate Education Board for proficiency in Experimental Science, Drawing, and Domestic Economy, as well as the conditions required for a Pass in these subjects, are published in the Rules of that Board.

I am,

Sir or Madam,

Your obedient Servant,

T. P. GILL,

Secretary.

II.—OFFICIAL CALENDAR, 1909-10.

1909.

August-September.—Application for the renewal of recognition of classes to be submitted at least a fortnight before their re-opening (Form S. 44b).

August 20th.—Latest date for applying for admission as a fee-paying student to the Royal College of Science, Dublin (Form S. 157).

September 14th, 15th, and 16th.—Examination for entrance to the Royal College of Science.

September 30th.—Latest date for submitting claims for attendance grants in respect of the Session 1908-9 (Form S. 62).

September 30th.—Latest date for submitting to the Department application for the renewal of recognition of classes for the Session 1909-10 (Form S. 44b).

Time-tables to be forwarded within fourteen days after the first meeting of the classes.

November 1st.—Pupils must have been registered as in attendance at each of the obligatory subjects of the preliminary, or of a special, course on or before this date. See Regulations, Section III., paragraph 3).

1910.

January 31st.—Latest date for sending in statement of the number of pupils following the courses, and of the number to be presented for the Intermediate Education Board's Examinations (Form S. 127).

March 30th.—Latest date for applying for admission to the Summer Courses of Instruction to Teachers (See Form S. 41).

March-June—"Special" Inspections.

April 29th.—Latest date for forwarding applications for admission to the examination for Science and Technological Scholarships (See Form S. 33).

May 2nd.—Managers of Day Secondary Schools, not on the list of schools recognised for grant by the Department, should apply by this date for admission of their schools to this list if grants are to be claimed in respect of the Session 1910-11 (Form S. 44a).

June 20th.—Returns showing the number of hours' instruction in the subjects of the Department's Programme, received by students presenting "Experimental Science" for the Intermediate Education Board's Examinations, to be forwarded to the Department by this date (Form S. 121).

June 28th, 29th, and 30th.—Examinations for Science and Technological Scholarships.

July 5th.—Summer Courses for Teachers begin.

FORM S. 106.

DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND,

UPPER MERRION STREET, DUBLIN.

SPECIAL EXAMINATIONS IN ELEMENTARY MODELLING
AND IN DRAWING ON THE BLACKBOARD.

The Department will hold, in October and November, 1909, Special Examinations in Elementary Modelling and in Drawing on the Blackboard for Candidates for the Irish Secondary Teachers' Drawing Certificate. The tests in these subjects are provided only for such candidates, and the Department will not be prepared to admit applicants who have not previously obtained at least three of the other successes required for the certificate.

Should a sufficient number of applications be received, arrangements will be made to hold Examinations in Dublin, Belfast, Cork, Londonderry, Limerick, Waterford, and Galway.

Applications for admission to the Examinations must be submitted not later than the 15th September, on Form S. 117 in the case of Elementary Modelling, and on Form S. 119 in the case of Drawing on the Blackboard. Copies of these forms may be obtained, after the 15th August, from the Offices of the Department.

The Department have not fixed any fee to be paid by Candidates, but the Managers of the schools at which the Examinations will be conducted will be at liberty to charge each applicant a fee not exceeding 2s. 6d.

DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND.

UPPER MERRION STREET, DUBLIN.

I.—SPECIAL EXAMINATIONS FOR TEACHERS' QUALIFICATIONS IN EXPERIMENTAL SCIENCE.

The Department will hold, in 1910, special examinations for Teachers' qualifications in Experimental Science. Each examination will be divided into two portions, the first a written test to be held on Saturday, the 14th May, from 11 a.m. to 2 p.m., and the second a practical examination to be held subsequently on a date to be fixed by the Department, and which will be duly notified to candidates. Provisional recognition to give instruction in the First, Second, Third, or Fourth Year Syllabuses of the Department's Programme of Experimental Science for Day Secondary Schools, will be granted to those candidates who pass the examination.

The subjects of the Special Examinations will be :

- (1) First Year Syllabus of the Preliminary Course.
- (2) Second Year Syllabus of the Preliminary Course.
- (3) Physics (Third Year Syllabus—General Physics and Heat).
- (4) Physics (Fourth Year Syllabus—Course A).
- (5) Physics (Fourth Year Syllabus—Course B).
- (6) Chemistry (Third Year Syllabus).
- (7) Chemistry (Fourth Year Syllabus).
- (8) Mechanical Science (Third Year Syllabus).
- (9) Mechanical Science (Fourth Year Syllabus).
- (10) Botany (Third Year Syllabus).
- (11) Botany (Fourth Year Syllabus).
- (12) Physiology and Hygiene (Third Year Syllabus).
- (13) Physiology and Hygiene (Fourth Year Syllabus).
- (14) Geology.

The examination in any subject will be open only to those teachers in Secondary Schools who have received at least 100 hours' practical instruction in that subject within two calendar years previous to the date of the present examination. Before entering upon the course of instruction each Teacher must obtain, in writing, the Department's approval of the conditions under which such instruction is to be given.

Teachers who have made satisfactory attendance at the Summer Courses of Instruction conducted by the Department in 1908 and 1909, and who, as a result of the examination at the conclusion thereof, failed to secure a certificate, or obtained recognition to teach

for one year only, will be admitted to the Special Examination in that subject without having to satisfy the Department as to attendance at further courses of instruction.

Candidates will not be permitted to sit for examination in more than one subject in any one year.

Should a sufficient number of applications for examination be received, the Department will arrange to hold the written examination at Dublin, Belfast, Cork, Londonderry, Limerick, Waterford, and Galway, and, in very exceptional circumstances, other centres might be arranged for, provided that special written application is made by School Managers before the 28th February, 1910.

Application for admission to the examination must be made before the 28th February, 1910, on Form S. 118, copies of which may be obtained, after the 1st January, upon application to the offices of the Department.

II.—REGULATIONS UNDER WHICH THE DEPARTMENT ARE PREPARED TO RECOGNISE SPECIAL COURSES OF INSTRUCTION IN EXPERIMENTAL SCIENCE FOR TEACHERS IN DAY SECONDARY SCHOOLS.

The Instructor in charge of classes for Teachers must be specially qualified, and his qualifications must be approved of by the Department for the purposes of the Special Course of Instruction.

The Laboratory must also be approved of by the Department for the purposes of the Special Course of instruction.

Special classes, conducted during the winter in a Technical School or central institution, other than Training Colleges, may be registered as Science classes, and grants earned according to the regulations and scale of payment set out in the Programme for Technical Schools and Science and Art Schools and Classes.

Attendance at theoretical instruction may not be taken into account when computing the 100 hours' practical instruction referred to in the third paragraph of Section 1 of this form.

Application for the recognition of special classes for Teachers *must be made by letter*, accompanied by detailed proposals upon Form S. 54. Attendance at lessons previous to the receipt of the Department's written approval of the arrangements may not be reckoned as part of the 100 hours' practical instruction.

Form S. 190.

DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND,

UPPER MERRION STREET, DUBLIN.

INDUSTRIAL SCHOLARSHIPS, 1909.

The Department will, in August, 1909, award not more than six Industrial Scholarships to persons engaged in industries, such as the Woollen, Linen, Leather and Tanning industries.

The object of these Scholarships is to enable selected persons, who must already have been engaged in one of the higher branches of the industry, to take a full course of instruction in an institution providing special courses of an approved character, with a view to training them for the management of such an industry. Candidates will be required to show that there is a reasonable expectation of their being able to find suitable employment in the industry in Ireland after the termination of their Scholarships.

The Scholarships will be tenable at some higher institution, to be approved by the Department, in which the industry, and the principles underlying it, are taught. They will be of the value of £80 each, and may be renewed for a second or a third year at the discretion of the Department.

The Scholarship holders will be selected by the Department on consideration of the qualifications and experience of the applicants.

Certificates of good character will be required from all applicants, and selected candidates will be required to produce a medical certificate of health and an authenticated copy of certificate of birth.

The decision of the Department in regard to the selection of candidates, or to any other question arising out of these Scholarships, will be final.

Candidates must fill in and return, addressed to the Secretary of the Department, not later than the 30th June, 1909, Form S. 192, copies of which may be had on application.

Form S. 248.

Examination of Works.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET, DUBLIN,

June, 1909.

SIR,

With reference to the Art Works required to be submitted by Candidates for the Irish Secondary Teachers' Honours Drawing Certificate, I have to direct your attention to the terms of Circular 16, and to point out that it will be necessary for the works executed for this purpose by students of the above-named school during the current academic year to be submitted to the Department during the month of August.

Copies of the forms and labels prescribed for use in connection with the forwarding of these works may be obtained after the 1st July upon application to the Offices of the Department. Each application should state the probable number of works to be submitted.

I am, Sir,

Your obedient Servant,

T. P. GILL,
Secretary.

LIST OF RESIDENTIAL SCHOOLS OF DOMESTIC TRAINING IN IRELAND RECOGNISED BY THE DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND AS SCHOOLS AT WHICH SCHOLARSHIPS FOR GIRLS, AWARDED UNDER THE CONDITIONS OF COUNTY SCHEMES OF TECHNICAL INSTRUCTION, ARE TENABLE.

NAME OF SCHOOL.	Correspondent to whom all Communications must be addressed.
1. *Belfast: School of Domestic Training (Under the direction of a Committee of Management).	The Principal, School of Domestic Training, Clanchattan House, Limestone Road, Belfast.
2. Carrick-on-Suir: Residential School of Domestic Training (Under the direction of the Sisters of Mercy).	Sister M. Vincent Campbell, Convent of Mercy, Carrick-on-Suir.
3. *Dublin: Domestic Training Institute (Under the direction of the Board of Education of the General Synod of the Church of Ireland).	The Reverend T. O'Morchoe, Kilternan Rectory, Golden Ball, Dublin.
4. Dundrum (Co. Tipperary): Residential School of Domestic Training (Under the direction of the Presentation Sisters).	Mrs. M. B. Hogan, Presentation Convent, Thurles.
5. Dunmanway: Residential School of Domestic Training (Under the direction of the Sisters of Charity).	Sister Vincent O'Brien, St. Mary's, Dunmanway.
6. *Killarney: School of Housewifery (Under the direction of the Department of Agriculture and Technical Instruction for Ireland).	Miss L. Russell, Matron, School of Housewifery, Killarney.
7. *Kilmore (Co. Wexford): Residential School of Domestic Training (Under the direction of the Sisters of St. John of God).	Sister M. Stanislaus Dunne, Convent of St. John of God, Wexford.
8. Moate: Residential School of Domestic Training (Under the direction of the Sisters of Mercy).	Sister M. Raphael Farrell, Convent of Mercy, Moate, Co. Westmeath.
9. Stradbally: Residential School of Domestic Training (Under the direction of the Presentation Sisters).	Mrs. M. Brigid O'Sullivan, Presentation Convent, Stradbally, Queen's County.

NOTE.—Schools marked with an * are specially recognised by the Department as Institutions for the training of Domestic Servants.

Provision is also made at the Irish Training School of Domestic Economy, St. Kevin's Park, Kilmacud, Stillorgan, Co. Dublin, for the training of a limited number of domestic servants. In the case of this School no fee is charged for either tuition or board and residence. Any communication respecting the Irish Training School of Domestic Economy should be addressed to Miss Croker, 20 Kildare Street, Dublin.

III.—FISHERIES.

ANNUAL REPORT ON THE SEA AND INLAND FISHERIES OF IRELAND.

The results of the biological and physical investigations carried out by or on behalf of the Fisheries Branch of the Department of Agriculture and Technical Instruction for Ireland will, in future, be published only in the series of papers entitled *Scientific Investigations*, which will not be reprinted in an annual volume. The last of such annual volumes will be Part II. of the Report for the year 1906.

Copies of the series referred to will be obtainable from the Agents for the sale of Government Publications, or, in exchange, from the Fisheries Branch of the Department.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
FISHERIES BRANCH,
3 KILDARE PLACE,
DUBLIN, April, 1909.

IV.—FOOD AND DRUGS.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

No. 11230/09.

MEMORANDUM.

BUTTER AND MARGARINE ACT, 1907.

REGISTRATION OF BUTTER FACTORIES.

The above cited Act, which came into operation on the 1st January, 1908, requires (Section 1) the registration of "Butter Factories," that is to say—*any premises on which by way of trade butter is blended, reworked or subjected to any other treatment, but not so as*

to cease to be butter—Premises in which butter purchased in bulk is merely cut into rolls need not, because of this treatment, be registered as butter factories.

Application for Certificate of Registration must be made by the owner or occupier of each butter factory to the proper local authority, *i.e.*, to the County Council or to the Town Council of the Borough, as the case may be, in which such butter factory is situate.

The Local Government Board for Ireland, by Order dated the 11th December, 1907, have directed that the following particulars shall be stated in each application for registration:—

- (a) The name and address of the owner or occupier carrying on business in such factory and making the application.
- (b) The situation of the factory.

Every application must be signed by the person making it, or in the case of an application by a joint stock company, by some person duly authorised to act on behalf of such company.

The Local Government Board, in the Order referred to, also prescribe the Form of Certificate of Registration to be issued by the Local Authority to the person whose application is in due form.

Failure to register any premises which come within the definition of butter factory as given above, renders the person in default liable to heavy penalty as provided for in the Butter and Margarine Act, 1907.

The Act prohibits the registration, as a butter factory, of premises which form part of or communicate, otherwise than by a public street or road, with premises where margarine, margarine cheese, or mixtures of butter with milk or cream are manufactured or dealt in wholesale.

This prohibition does not, however, apply to premises which on the 1st January, 1907, were being used as a butter factory and formed part of or communicated with premises which were then registered under the Sale of Foods and Drugs Act, *if and so long as this Department so directs*.

Each registration should forthwith be notified by the Local Authority to the Department.

Any creamery which is also used as a butter factory is excluded from participation in the benefits derivable from the Department's Scheme for Encouraging Improvement in the Management of Creameries.

DEPARTMENT OF AGRICULTURE AND
TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION STREET, DUBLIN.
June, 1909.

DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND.

SULPHATE OF COPPER FOR USE IN SPRAYING POTATOES.

Several inquiries having been addressed to the Department of Agriculture, as to whether a licence is required for the sale of Sulphate of Copper for agricultural purposes, the Department desire to make it known that a licence is not required for the sale of this substance, as Section 2 of the Poisons and Pharmacy Act does not apply to Sulphate of Copper.

V.—VETERINARY.

ALPHABETICAL LIST OF SHEEP DIPS.

Which have been approved up to 6th June, 1909, by the Department of Agriculture and Technical Instruction for Ireland, under the Sheep Scab (Ireland) Order of 1905, in addition to those specified in the Second Schedule to that Order.

NOTE.—As it is by the manufacturers or proprietors that the names given to Dips have been selected, no responsibility is assumed by the Department for the use of the term "Non-poisonous" in the title of any Dip.

Name of Dip.	Name and Address of Manufacturer or Proprietor.	Proportion of dilution in water approved for each dip when used for Sheep Scab.	
		Quantity of Dip.	Number of gallons of water.
Albion Powder Dip, ..	P. N. White, Chemist, Sligo,	1 lb. 14 oz. (1 packet.)	20
Antiseptic Dip, ..	The North of Ireland Chemical Co., Ltd., Belfast.	1 gallon,	50
Do. (hot water quality), ..		1 gallon,	
Bailey's Powder Sheep Dip, ..		2 lbs.	25
Bailey's Fluid (Non-Poisonous) Sheep Dip and Cattle Wash, ..	Wm. Bailey and Son, Horsley Fields Works, Wolverhampton,	1 gallon,	50
Bankhall Sheep Dip, ..	The Liverpool and Bankhall Seed Crushing and Chemical Company, Limited, 13, Knowsley Buildings, Exchange, Liverpool.	1 part,	50 parts
*Battle's Fluid Sheep Dip, ..	Battle, Maltby and Bower, Victoria Chemical Works, Lincoln.	1 gallon,	60
Battle's Powder Dip, ..		1 lb. 14 ozs.	20
Battle's Paste Dip, Non-Poisonous, ..		10 lbs.	50
Battle's Paste Dip, Poisonous, ..		10 lbs.	50
Bell and Riddle's Prepared Cresolene, ..	Bell and Riddle, Analytical Laboratory, Hexham.	1 gallon,	49
Bell and Riddle's Special Non-Arsenical Sheep Dip, ..		10 lbs.	50
Bell and Riddle's Improved Powder Dip and Fly Powder, ..		2½ lbs.	25½
Bell and Riddle's Soluble Oil Sheep and Lamb Dipping Composition, ..		10 lbs.	50
Bell and Riddle's "Triol" Dip, ..	Messrs. C. Zimmermann and Company, 9 and 10 St. Mary-at-Hill, London, E.C.	1 gallon,	90
Beta-Lysol Sheep Dip, ..		1 gallon,	50
Bigg's "Glenovis," ..	Thomas Bigg, 11½ Great Dover-street, London, S.E.	2 lbs.	16
Bigg's Paste Dip, ..	F. W. Brittain, The Medical Hall, 84, West street, Drogheda,	17 lbs.	100
Brittain's Powder Dip, ..		1 lb. 14 ozs. (1 packet.)	20
Broderick's Powder Dip, ..	J. J. Broderick, Chemist, Fermoy,	1 lb. 14 oz. (1 packet.)	20
Calvert's Carbolic Sheep Wash, ..	F. C. Calvert and Co., Bradford, Manchester.	1 gallon,	100
Celtic Sheep Dip, Winter Quality, ..	Messrs. Ewing and Robertson, Empire Works, Canntyne, Glasgow.	1 gallon,	40
Celtic Sheep Dip, Summer Quality, ..		1 gallon,	40
Clements' Sheep Dipping Fluid, ..	A. Clements, Chemist and Druggist, The Medical Hall, Cootehill.	1 gallon,	70
"Climax" Poisonous Powder Sheep Dip, ..	The Boundary Chemical Co., Limited, Railway Arches, Lutob-street, Liverpool.	1 lb.	10
"Climax" Liquid Non-Poisonous Sheep Dip, ..		1 gallon,	50
Conway's Powder Dip, ..	J. J. Conway, Chemist, Naas.	1 lb. 14 ozs. (1 packet.)	20
Cooke's Powder Dip, ..	William Cooke, The Medical Hall, Gorey.	1 lb. 14 ozs. (1 packet.)	20
Cooper's Powder Dip, ..	R. H. Cooper, Medical Hall, Wexford.	1 lb. 14 ozs. (1 packet.)	20

*The proportion of dilution shown in the case of this dip is that which the Department have now approved as regards that particular preparation in substitution for a different proportion approved some time ago.

ALPHABETICAL LIST OF SHEEP DIPS—continued.

Name of Dip.	Name and Address of Manufacturer or Proprietor.	Proportion of dilution in water approved for each dip when used for Sheep Scab.	
		Quantity of Dip.	Number of Gallons of water.
Cooper's "Albyn" Fluid Sheep Dip.	Messrs. W. Cooper and Nephews Chemical Works, Berkhamstead.	1 gallon,	80
Cooper's Sheep Dipping Powder.		30 ozs.	20
Cooper's Fluid.		1 gallon,	80
Cooper's "Albyn" Paste Dip.		1 lb.	5
"Delight" Sheep Dip, ..	Joseph Dee and Sons, 5 Cross-street, Manchester.	1 part,	100 parts.
Devlin's Powder Dip, ..	P. J. Devlin, L.P.S.I., Chemist, Thurles.	1 lb. 14 ozs. (1 packet.)	20
Doyle's Powder Dip, ..	W. Doyle and Co., Registered Druggists, Athlone.	1 lb. 14 ozs. (1 packet.)	20
Doyle Brothers' Powder Dip, ..	Doyle Brothers, Registered Druggists, Athy.	1 lb. 14 ozs. (1 packet.)	20
Ewe Ram (Non-Poisonous) Sheep Dip.	Messrs. Reid and Robertson, 68 Hyde-park-street, Glasgow.	25 lbs.	80
Ewe Ram (Poisonous) Sheep Dip.		25 lbs.	80
"Elswick" Sheep Dip, ..	Davis, Goodall and Company, Newcastle-on-Tyne.	1 gallon,	60
"F. B. Sheep Dip," ..	Messrs. Fenner Brothers, Little Island, Chemical Works, Cork.	1 part,	50 parts.
Farmers' Sheep Dip (No. 1, 2, 3).	Hall, Dunbar and Company, St. Ninian's Works, Leith.	1½ gallons.	80
Fieldings' Liquid Sheep Dip, ..	P. J. Fielding, F.C.S., 66 Patrick-street, Cork.	1 pint.	10
Germokil Sheep Dip, ..	The Apothecaries' Hall of Dublin, 40 Mary street, Dublin.	1 part.	60 parts.
Goldon's Powder Dip, ..	Goldon and Co., Medical Hall, Birm.	1 lb. 14 ozs. (1 packet.)	20
"Golden Magnet" Sheep Dipping Powder.	Cope Brothers and Co., Ltd., Lord Nelson-street, Liverpool.	5 lbs.	10
Gorry's Fluid Dip, ..	Joseph Gorry, 54 South-main-street, Naas. Grindley and Co., Ltd., Poplar, London, E.	1 gallon.	60
Gorry's Powder Dip.		30 ozs.	20
Grindley's "Pioneer Brand" Sheep Dip.		1 gallon.	70
Hadden's Powder Dip, ..	Hadden's Medical Hall, Wexford, New Ross and Enniscorthy.	1 lb. 14 ozs. (1 packet.)	20
Hamilton's Powder Sheep Dip,	W. J. Hamilton, Druggist, Gortin.	1 lb. 14 ozs. (1 packet.)	17
Harrington's Specific Sheep Dip,	Cork Chemical and Drug Co., Ltd., Cork.	1½ lbs.	13
"Harvey's Improved Sheep Dip.	J. W. Harvey, L.P.S.I., 31 Great George's-street, Cork.	1 gallon,	70
Hayward's Yellow Paste Dip, ..	Messrs. Tomlinson and Hayward Ltd., Lincoln.	1 lb.	8
Hayward's Combined Glycerine Sheep Dip.		1 lb.	5
Hayward's Glycerine Dip (Non-Poisonous Paste or Bloom).		1 lb.	5
Hayward's Liquid (or Fluid) Dip.		1 gallon,	60
Hayward's "Glycerine" Dip, ..	Luke J. Healy, Chemist and Druggist, Drogheda.	1 lb.	4
Hayward's "Glycerine Cake" Dip.		1 lb.	5
Healy's Powder Dip, ..		1 lb. 14 ozs. (1 packet.)	20
Hewthorn's Wool Improving Sheep Dip.	F. Hewthorn and Co., Ltd., 70 Finsbury Pavement, London E.C.	1 gallon,	48
Hibernia Sheep Dip, ..	Snowdon, Sons and Co., Ltd., Millwall, London, E.	1 gallon,	40
"Highland" Fluid Sheep Dip,	Messrs. Alex. Robertson and Sons, Argyle Chemical Works, Oban, N.B.	1 gallon,	75
"Highland" Powder Sheep Dip.		1 lb. 14 ozs. (1 packet.)	17
"Ialine" Sheep Dip, ..		1 gallon,	70
	Burt, Bolton and Haywood, Ltd., 64 Cannon-street, London, E.C.		

*The proportion of dilution shown in the case of this dip is that which the Department have now approved as regards that particular preparation in substitution for a different proportion approved some time ago.

ALPHABETICAL LIST OF SHEEP DIPS—*continued.*

Name of Dip.	Name and Address of Manufacturer or Proprietor.	Proportion of dilution in water approved for each dip when used for Sheep Scab.	
		Quantity of Dip.	Number of Gallons of water.
Jackson's Fluid Sheep Dip, ..	Ethelbert Jackson and Company, Harbour-road, Swansea.	1 gallon, 29 ozs. (1 packet.)	50
Jackson's Powder Sheep Dip, ..		when used in a hand bath 29 ozs. (1 packet.)	16
Jeyes' Non-Poisonous Sheep Dip,	Jeyes' Sanitary Compounds Co., Ltd., 64 Cannon-street London, E.C.	when used in a swim bath 1 gallon,	20
"John O'Gaunt" Fluid Dip, ..	Maudsley and Son, The Arcade, Lancaster.	1 gallon,	40
"John O'Gaunt" Paste Dip, (No. 3).		10 lbs.	30
Kennedy's Sheep Dipping Powder,	W. P. Kennedy, Borris, Co. Carlow.	30½ ozs. (1 packet.)	15
Kiloh's Non-Poisonous Liquid Sheep Dip.	Messrs. Kiloh and Co., Ltd., Cork.	1 part,	50 parts.
Kiloh's Sheep Dipping Composition.		4 lbs.	13
Kiloh's Sheep Dipping Powder,	Lawes' Chemical Co., Ltd., 59 Mark-lane, London, E.C.	1½ lbs.	13
Lawes' Fluid Dip, ..		1 gallon,	40
Lawes' Kalyptos Sheep Dip, ..		5 lbs.	30
Lawes' Paste Dip, Poisonous, ..		1 lb.	4
Lawes' Paste Dip, Non-Poisonous.		1 lb.	4
Lawes' Powder Dip, ..	Crawford, Cree and Lawries, Ltd., Glasgow.	2 lbs.	20
Lawrie's Powder Dip, ..		1 lb. 14 ozs. (1 packet.)	20
*Little's Non-Poisonous Cake Sheep Dip.	Morris, Little and Son, Ltd., Doncaster.	1 lb.	5
*Little's Non-Poisonous Fluid Sheep Dip, ..		1 gallon,	50
*Little's Non-Poisonous Paste Sheep Dip, ..		1 lb.	5
*Little's Poisonous Liquid Dip,		1 gallon,	60
*Little's Poisonous Powder Sheep Dip.		30 ozs.	20
Little's Poisonous Fly Paste Sheep Dip,	Messrs. Corry and Co., Ltd., 13 and 15 Finsbury-street, London, E.C.	1 lb.	8
"Long's Specific," ..		1 gallon,	5
MacMahon's Powder Sheep Dip,	Mr. N. B. MacMahon, Killeter, Co. Tyrone.	1 lb. 14 ozs. (1 packet.)	17
Magee's Royal Meath Powder Sheep Dip.	E. P. Magee, Veterinary Chemist, Kells.	1 lb. 14 ozs. (1 packet.)	17
Mallen's Carbolic Paste Dip, ..	Mallen and Co., 89 Upper Dorset-street, and Blessington-lane, Dublin.	1 lb.	2½
Mallen's Powder Dip, ..		5 lbs.	44
Martin's Hellebore and Carbolic Sheep Dip.		1 lb.	3
McDougall's Improved Concentrated Liquid Sheep Dip.	McDougall Bros., 68 Port-street, Manchester.	1 part,	100 parts.
McDougall's Grease Sheep Dip,		3 lbs.	5
McDougall's Sheep Dip (Paste or Hot Water Quality).		1 gallon,	50
McDougall's Sheep Dip (Cakes and Blocks) Hot Water Quality (Patented).	Hugh McGuire, Quay, Wexford,	1 part,	50 parts.
McDougall's Arsenic Sulphur Dip.		5 lbs.	40
McDougall's Liquid Sheep Dip (Cold Water Quality).		1 gallon,	80
McGuire's Liquid Non-Poisonous Sheep Dip	J. J. McHugh, Medical Hall, Athy.	1 gallon,	40
McHugh's Powder Dip, ..		1 lb. 14 ozs. (1 packet.)	20
McHugh's Fluid Dip, ..		1 gallon,	60
McHugh's Paste Dip, Non-Poisonous.	F. H. McLeod and Sons, 61 Bishop-street, Anderston, Glasgow.	10 lbs.	50
McLeod's Non-Poisonous Sheep Dip.		10 lbs.	25
McLeod's "Universal" or Poisonous Sheep Dip.		10 lbs.	50

*The proportion of dilution shown in the case of this dip is that which the Department have now approved as regards that particular preparation in substitution for a different proportion approved some time ago.

ALPHABETICAL LIST OF SHEEP DIPS—continued.

Name of Dip.	Name and Address of Manufacturer or Proprietor.	Proportion of dilution in water approved for each dip when used for Sheep Scab.	
		Quantity of Dip.	Number of Gallons of water.
Miller's Sheep Dip, ..	R. Miller and Co., Clydesdale Works, 50 Victoria road, Glasgow.	1 part.	80 parts.
Murtagh's Powder Dip, ..	Murtagh's Medical Hall 37, Shop-street, Drogheda.	1 lb. 14 ozs. (1 packet.)	20
"Necrotine" Sheep Dip, ..	The British Nicotine Company, Ltd., Bootle, Liverpool.	1 part.	32 parts.
"Nicotina" Sheep Dip, ..	Messrs. Corry and Co., Limited, 13 and 15 Finsbury-street, London, E.C.	1 gallon,	50
"Niquas" Sheep Dip, ..	Messrs. Alex. Robertson and Sons, Argyle Chemical Works, Oban, N.B.	1 gallon,	35
Non-Poisonous Paste "Highland" Sheep Dip. ..		1 lb.	5
Non-Poisonous Sheep Dip, ..	Messrs. Kerr, Lang, and Jackson, Ltd., Londonderry	1 lb.	5
Odams' Powder Dip, ..	Odams' Manure and Chemical Co., Ltd., 109 Fenchurch street, London.	2 lbs.	20
Odams' Fluid Dip, ..		1 part.	50 parts.
"Ovizal" Fluid Sheep Dip, ..		1 gallon,	100
"Ovizal" Paste Dip, ..		1 lb.	5
"Ovizal" Powder Dip, ..	Hay, Stevens and Co., Kelvin-dock Chemical Works, Maryhill, near Glasgow.	6 packets of dip each containing 1 lb. 14 ozs. of powder.)	100
Pattison's Special Paste Dip, ..	G. Pattison, Cloughjordan, ..	1 lb.	8
Poisonous Paste "Highland" Sheep Dip. ..	Messrs. Alex. Robertson and Sons, Argyle Chemical Works, Oban, N.B.	1 lb.	5
*Puritas Sheep Dipping Powder.		2 lbs.	20
Puritas Sheep Dipping Fluid, ..		1 part,	50 parts.
Puritas Concentrated Liquid Sheep Dip.	Puritas Disinfectants Co., Ltd., Evington, Valley-road, Leicester.	1 part.	80 parts.
Puritas Golden Paste Sheep Dip.		5 lbs.	40
Puritas Sheep Dip (Hot Water Quality).		1 part,	50 parts.
Quibell's Combined Paste Dip (Arsenical and Carbolic).		1 lb.	5
Quibell's Liquid Sheep Dip, ..		1 gallon,	40
Quibell's Non-Poisonous Paste or Cake Dip.		5 lbs.	25
Quibell's Powder Sheep Dip, ..	Quibell Brothers, Limited, Newark, England.	1 lb. 13 ozs. (1 packet.)	17
		For long wool sheep.	21
		1 lb. 13 ozs. (1 packet.)	17
		For close wool sheep.	21
Robinson's Sheep Dip, ..	Robinson Brothers, Ltd., West Bromwich, Staffordshire.	1 part,	80 parts.
"Rome's Sheep Bath," ..	H. F. Rome, Manufacturing Chemist, 1 and 3 Solway-street, Annan, N.B.	26 ozs.	42
Scott's Sheep Dip, ..	Scott and Dunn, Westbarns, Dumbar, Scotland.	1 part,	35 parts.
Sivelle's Sheep Dip, ..	John Lewis, M.P.S.I., Skibbereen.	1 gallon,	100
Smith's Powder Sheep Dip, ..	H.M. and W. Smith, Merchants and Druggists, Roscrea.	1 lb. 13 ozs. (1 packet.)	17
		For long wool sheep.	21
		1 lb. 13 ozs. (1 packet.)	17
		For close wool sheep.	21
Snowdon Sheep Dip, ..	Snowdon, Sons and Co., Ltd., Millwall, London, E.	1 gallon,	40
Special Fly Dip, ..	The North of Ireland Chemical Co., Ltd., Belfast.	14 lbs.	90
Special "Highland" Fly Dip, ..	Messrs. Alex. Robertson and Sons, Argyle Chemical Works, Oban, N.B.	1 lb.	5

*The proportion of dilution shown in the case of this dip is that which the Department have now approved as regards that particular preparation in substitution for a different proportion approved some time ago.

ALPHABETICAL LIST OF SHEEP DIPS—*continued.*

Name of Dip.	Name and Address of Manufacturer or Proprietor.	Proportion of dilution in water approved for each dip when used for Sheep Scab.	
		Quantity of Dip.	Number of Gallons of water.
Smyth's Powder Dip, ..	J. Smyth, Merchant, Wicklow,	1 lb. 14 ozs.	20
"Sular" Sheep Dip, ..	The Chemical Union, Ltd., Ipswich.	(1 packet.)	16
"Tarbol" Sheep Dip, ..		2 lbs.	
Taylor's Powder Dip, ..	R. Taylor, Druggist, Tinahely,	1 gallon,	50
Torrens' Instantaneous Sheep Dipping Fluid, ..	J. M. Torrens, M.P.S.I., North Main-street, Youghal. ...	1 lb. 14 ozs.	20
"Tynedale" Sheep Dip, ..	John Ridley, Hexham Chemical Works, Hexham-on-Tyne.	(1 packet.)	80
The "Universal" Sheep Dipping Powder.	The North of Ireland Chemical Co., Ltd., Belfast.	10 lbs.	60
Visanus Sheep Dip, ..	The Visanus Company, 14 Waterloo-lane, Glasgow.	2 lbs.	20
Watson's Fluid Sheep Dip (Non-Poisonous).	C. Watson, 294 Washwood Heath-road, Birmingham.	1 gallon,	50
"Wells' Dipping Compound" Sheep Dip.	W. F. Wells and Son, 52 Upper Sackville-street, Dublin.	1 part,	60 parts.
Whelan's Powder Dip, ..	John M. Whelan, The Medical Hall, Galway.	1 gallon,	80
White's Non-Poisonous Sheep Dip.	P. N. White, Chemist, Sligo,	1 lb. 14 ozs.	20
		(1 packet.)	50

NOTES AND MEMORANDA.

A meeting of the Agricultural Board was held at the Offices of the Department, Upper Merrion Street, Dublin, on Wednesday, the 30th June, 1909. The following **Meetings of the Boards:—** were present:—The Right Hon. T. W. Russell, M.P., P.C., Vice-Chairman of the Department, in the chair; Very Rev. Canon Daly, D.C.; Colonel N. T. Everard, H.M.L.; His Grace the Most Rev. John Healy, D.D., Lord Archbishop of Tuam; Most Rev. Denis Kelly, D.D., Lord Bishop of Ross; Mr. John S. F. McCance, J.P.; Mr. William McDonald, J.P.; The Right Hon. Lord Monteagle, K.P., D.L.; Mr. H. de F. Montgomery, D.L.; Mr. George Murnaghan, M.P.; Mr. P. J. O'Neill, J.P.

Sir Josslyn Gore-Booth, Bart., D.L., and Mr. R. Downes, J.P., were unavoidably prevented from attending the meeting.

Mr. T. P. Gill, Secretary of the Department; Mr. J. R. Campbell, B.Sc., Assistant Secretary in respect of Agriculture; Mr. R. Cantrell, I.S.O., Chief Clerk; Mr. W. G. S. Adams, M.A., Superintendent of the Statistics and Intelligence Branch; Mr. J. S. Gordon, B.Sc., Chief Agricultural Inspector; Mr. J. P. Walsh, Clerk in Charge of Accounts; Mr. J. D. Daly, M.A. (who acted as Secretary to the meeting); and Mr. J. V. Coyle, were also present.

The Board had under consideration the following county and other schemes for the year 1909-10 as revised in the light of the experience gained by the County Committees during the past year, and, as regards the live stock schemes, in consultation with the Advisory Committees:—Live stock, agricultural instruction, agricultural classes, poultry-keeping, butter-making, horticulture and bee-keeping, cottage and farm prizes, subsidies to shows, flax cultivation. The proposals having been discussed, the Board concurred in the application of funds for the purposes of the schemes.

The Board made provision for the maintenance, during the coming year, of the agricultural stations and schools working in connection with the Department, and for the instruction of girls at schools of rural domestic economy.

Arrangements were made for the continuance of Agricultural Scholarships at the Royal College of Science, and for the maintenance of the Department's Forestry Station at Avondale.

The following, among other matters, were also under consideration:—Special investigation (flax, barley, wheat, tobacco, early

potatoes, etc.), the marketing of Irish produce in Great Britain, and proposals relating to inland fisheries.

A meeting of the Joint Committee appointed by the several Urban County Districts in the County of Dublin, under

II.—Board of Technical Instruction. Section 10 (b) of the Agriculture and Technical Instruction (Ireland) Act, 1899, was held on Monday, 10th May, 1909, at the Offices of the Department, Upper Merrion Street, Dublin, for the purpose of

appointing a representative on the Board of Technical Instruction for the triennial period, 1909-12. There were present:—Mr. Denis J. Black (Dalkey), Mr. W. A. Evans, J.P. (Kingstown), Mr. John Good (Pembroke), Mr. Francis McBride, J.P. (Rathmines and Rathgar), Mr. Reginald T. Meagher (Killiney and Ballybrack), and Mr. William Wallace, J.P. (Blackrock).

Mr. Reginald T. Meagher was moved to the chair.

Mr. John Good was appointed a member of the Board of Technical Instruction.

A meeting of the Board of Technical Instruction was held on Tuesday, the 13th July, 1909, at the offices of the

III.—Board of Technical Instruction. Department, Upper Merrion Street, Dublin. The following were present:—The Right Hon. T. W. Russell, M.P., Vice-President of the Department, in the chair; Mr. Frank Barbour, Most Rev. John

Clancy, D.D., Lord Bishop of Elphin; Mr. James Crozier, J.P.; Mr. Alexander Dickson, Alderman Thomas Donnellan, Mayor of Limerick; Mr. Christopher J. Dunn, J.P.; Mr. John Good, Sir John Barr Johnston, J.P.; Mr. William Macartney, J.P.; Mr. John A. McClelland, M.A., D.Sc., F.R.S.; Mr. Samuel T. Mercier, Mr. W. R. J. Molloy, J.P., M.R.I.A.; Mr. Seaghan T. O'Ceallaigh, Most Rev. Richard A. Sheehan, D.D., Lord Bishop of Waterford and Lismore; Mr. Richard Sisk, and Mr. Alexander Taylor.

Mr. T. P. Gill, Secretary of the Department; Mr. George Fletcher, F.G.S., Assistant Secretary in respect of Technical Instruction; Mr. W. G. S. Adams, M.A., Superintendent of the Statistics and Intelligence Branch; Mr. J. P. Walsh, Clerk in Charge of Accounts; Mr. J. D. Daly, M.A. (who acted as Secretary to the meeting); and Mr. A. Kelly, were also present.

Apologies for inability to attend the meeting were received from the Rev. T. A. Finlay, F.R.U.I.; Mr. Joseph A. Glynn, J.P.; Sir James Henderson, D.L.; Mr. Thomas Power, and Dr. W. J. M. Starkie.

The Board had under consideration the division of the annual sum of £55,000 as provided by Section 16 (1) (c) of the Agriculture and Technical Instruction (Ireland) Act, 1899. The Board concurred in the Vice-President's proposal that no change should be made in the allocation sanctioned for the last triennial period. Accordingly, the allocation of the funds for the three years ending the 31st March, 1912, will be as follows:—

For County Boroughs	£26,000
For districts other than County Boroughs, and for central purposes,	£29,000

Under the Act of 1899 the amount allocated for County Boroughs is distributed among the County boroughs in proportion to population, and is applicable by the respective Councils of these boroughs in aid of schemes approved by the Department for the purposes of technical instruction.

As regards the funds allocated for areas other than county boroughs, it was decided that the general basis of distribution hitherto in force should remain unchanged.

Technical instruction schemes in respect of the session 1909-10 for the following urban and county areas were considered:—*Urban Districts*:—Armagh, Ballymoney (joint urban and rural); Banbridge, Bangor, Carrickfergus, Coleraine, Enniscorthy, Holywood, Larne, Lurgan (municipal scheme), Lurgan (convent scheme), Newtownards, Tralee, Wexford. *Counties*:—Antrim, Armagh, Clare, Cork, Down, Kerry, Kilkenny, King's County, Longford, Mayo, Meath, Monaghan, Queen's County, Roscommon, Waterford, Westmeath, Wicklow.

The schemes were approved, and the Board concurred in the allocation of grants in aid thereof from the funds of the Department.

Revised schemes for the other urban and county areas in respect of the session 1909-10 are being completed in consultation with the local committees concerned, and will be brought forward at a subsequent meeting of the Board.

Mr. William R. J. Molloy, J.P., M.R.I.A., was unanimously re-elected to serve on the Consultative Committee for co-ordinating Educational Administration.

The Board had also under consideration the following matters:—The Scheme of Scholarships for boys; Summer Courses for teachers; provision for the maintenance of the Irish Training School of Domestic Economy, for the Killarney School of Housewifery, and for industrial scholarships.

In the forenoon the members of the Board visited the Royal College of Science, the Loreto College, Stephen's Green; Kevin Street Technical School, the Irish Training School of Domestic Economy, and the Metropolitan School of Art, at which Summer Courses for teachers are at present being conducted.

On Wednesday, 23rd June, 1909, the Department's Advisory Committee on Horse Breeding met at the Offices of the Department, when there were present:—Mr. T. P. Gill, Secretary of the Department (in the chair); Mr. E. M. Archdale, D.L.; Mr. James Daly, Mr. N. B. King, Mr. Hugh P. Ryan, and Mr. P. J. O'Neill, J.P. Mr. J. R. Campbell, Assistant Secretary in respect of Agriculture; Mr. J. S. Gordon, Chief Inspector for Agriculture; Mr. M. J. Cleary, M.R.C.V.S., Veterinary Inspector; and Mr. J. V. Coyle, were also present.

On Thursday, 24th June, 1909, the Department's Advisory Committee on Live Stock (exclusive of horses) met at the Offices of the Department, when the following were present:—Mr. J. R. Campbell, Assistant Secretary in respect of Agriculture (in the chair); Mr. R. A. Anderson, Mr. Edward Coey, J.P.; Mr. J. Cunningham, and Captain J. Lewis Riall, D.L. Mr. James S. Gordon, Chief Inspector for Agriculture, and Mr. J. V. Coyle were also present.

The Advisory Committees had under consideration the suggestions made by the various County Committees of Agriculture as to certain modifications in the Department's Live Stock Schemes for the season 1909-10.

On the 23rd of April, 1909, the Vice-President of the Department of Agriculture and Technical Instruction for Ireland appointed a Departmental Committee on the Irish Butter Industry. to inquire into and interpret the principal forms of trade description (as defined as Section 3 of the Merchandise Marks Act, 1887), at present applied in the United Kingdom to different grades of butter; and to suggest what additional measures, if any, it is desirable for the Department to take in the interests of the Irish butter industry, with special reference to the prevention of loss or injury to the industry from

the use of false trade descriptions. The members of the Committee are as follows:—

J. R. Campbell, Assistant Secretary in respect of Agriculture (Chairman);

Professor Thomas Carroll, Agricultural Inspector;

E. G. Haygarth Brown, Superintending Inspector of the Board of Agriculture and Fisheries;

The Earl of Carrick, Inspector for Irish Produce in Great Britain;

A Poole Wilson, Inspector of Dairying.

The Secretary to the Committee is Mr. D. J. McGrath.

Communications regarding the matters before the Committee should be addressed to the Secretary, 19 Upper Merrion Street, Dublin.

At Ballina Petty Sessions on the 27th April, 1909, the Master of the steam trawler, "City of York," of Fleetwood, was prosecuted by the Department of Agriculture and Technical Instruction for Ireland for trawling off part of the Coast of the County of Mayo in contravention of the Department's By-Law. A fine of £40, with £15 15s. costs, was imposed.

Fines for Illegal Trawling.

The Master of the s.s. "Loch Avon," of Aberdeen, which vessel was detected fishing in the prohibited area on four occasions, was, at the same Petty Sessions, fined £50 for each offence, with a total of £52 costs.

At a Special Court held at Waterford on the 8th May, 1909, the Master of the Belgian steam trawler "Isa" was prosecuted by the Department of Agriculture and Technical Instruction for Ireland for fishing in territorial waters, and also for a breach of the Department's By-Law, which prohibits steam trawling off the coast of the County of Wexford. Fines of £5 and £20, with costs, were imposed, and the net of the vessel was ordered to be forfeited.

At Falcarragh (County Donegal) Petty Sessions on the 11th May, 1909, the master of the s.s. "Ephrain," of Fleetwood, was prosecuted by the Department of Agriculture and Technical Instruction for Ireland for trawling in the neighbourhood of Tory Island in contravention of the Department's By-Law. A fine of £100, with £74 17s. 6d. costs, was imposed.

At Ballina Petty Sessions, on the 18th May, 1909, the Master of the s.s. "Hebden," of Fleetwood, was prosecuted by the Department of Agriculture and Technical Instruction for Ireland for

trawling off the Coast of the County of Mayo in contravention of the Department's By-Law. A fine of £100, with £36 10s. costs, was imposed.

At Ballina (County Mayo) Petty Sessions on the 8th June, 1909, the Master of the s.s. "Ephraim," of Fleetwood, was prosecuted by the Department of Agriculture and Technical Instruction for Ireland for trawling in Lacken Bay, in contravention of the Department's By-Law. A fine of £100, with £25 4s. 2d. costs, was imposed.

The second of this season's competitions was held on the 10th June, 1909. The judges were two in number, being

Surprise Butter representative butter merchants of London and **Competitions,** Manchester. Prizes were awarded to the under-

1909. mentioned competitors:—St. Ailbe's Co-operative

Agricultural and Dairy Society, Ltd; Rathkenny Joint Co-operative Dairy Society, Ltd.; Clones Co-operative Agricultural and Dairy Society, Ltd.; Leckpatrick Co-operative Agricultural and Dairy Society, Ltd.; Cononagh Mill Creamery (Proprietary); Donaling Co-operative Agricultural and Dairy Society, Ltd.; Finn Valley Co-operative Agricultural and Dairy Society, Ltd.; Shaneragh Co-operative Agricultural and Dairy Society, Ltd. A special additional prize of 10s. was awarded to the dairymaid at each Creamery obtaining a first class prize.

STATISTICAL

FISHERY STATISTICS—

STATEMENT of the Total QUANTITY and VALUE of the Fish returned compared with the

—	North Coast.				East Coast.			
	1909.		1908.		1909.		1908.	
	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.
	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
Brill,	—	—	—	—	9	23	7	17
Soles	—	—	1	2	130	524	59	232
Turbot,	—	—	—	—	23	90	19	53
Total Primo Fish, . .	—	—	1	2	162	637	85	302
Cod,	41	27	129	62	1,126	905	1,146	855
Conger Eel,	—	—	—	—	678	291	465	307
Haddock,	33	15	199	82	764	660	543	551
Hake,	—	—	—	—	580	533	480	470
Herrings,	11	9	—	—	223	71	47	26
Ling,	—	—	—	—	633	215	532	242
Mackerel,	—	—	—	—	—	—	—	—
Plaice,	185	199	273	345	481	490	1,216	1,534
Ray or Skate,	—	—	32	10	918	255	655	151
Sprats	—	—	—	—	—	—	—	—
Whiting,	2	1	25	12	888	706	617	583
All other except Shell Fish,	—	—	126	58	670	374	642	448
Total,	272	251	785	571	7,123	5,137	6,428	5,469
SHELL FISH :—	No.		No.		No.		No.	
Crabs,	6,678	41	6,018	33	1,840	13	660	4
Lobsters,	2,162	60	3,283	87	2,155	129	1,031	44
	Cwts.		Cwts.		Cwts.		Cwts.	
Mussels,	—	—	—	—	30	1	136	7
	No.		No.		No.		No.	
Oysters,	—	—	—	—	8,082	13	4,347	8
	Cwts.		Cwts.		Cwts.		Cwts.	
Other Shell Fish, . .	130	20	214	32	200	72	188	89
Total,	—	121	—	152	—	228	—	152
Total value of Fish landed	—	372	—	723	—	5,365	—	5,621

NOTE.—The above figures are

TABLES.**IRELAND.**

as landed on the IRISH COASTS during the month of April, 1909, as corresponding period in 1908.

South Coast.				West Coast.				Total.			
1909.		1908.		1909.		1908.		1909.		1908.	
Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.
Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
1	1	6	14	—	—	—	—	10	24	13	31
32	141	31	144	158	851	251	1,118	320	1,516	342	1,496
3	11	4	14	46	296	64	150	72	397	87	217
36	153	41	172	204	1,147	315	1,268	402	1,937	442	1,744
23	15	85	62	837	399	862	279	2,027	1,346	2,222	1,258
33	15	6	2	63	24	52	18	774	330	523	£ 327
7	3	12	5	493	310	1,220	607	1,297	988	1,974	1,245
—	—	—	—	—	—	100	32	580	533	580	502
165	60	684	158	1,770	269	2,169	482	2,169	409	2,900	666
51	61	248	183	195	100	1,130	362	879	376	1,910	787
5,895	2,317	22,065	8,086	2,981	1,349	4,755	2,086	8,876	3,666	26,820	10,172
83	96	161	192	145	149	437	274	894	934	2,087	2,345
11	4	16	4	55	15	521	90	984	274	1,224	255
—	—	—	—	—	—	—	—	—	—	—	—
107	32	66	16	104	54	185	103	1,101	793	893	714
174	91	208	122	309	141	962	302	1,153	606	1,938	930
6,585	2,847	23,592	9,002	7,156	3,957	12,708	5,903	21,136	12,192	43,513	20,945
No.	—	No.	—	No.	—	No.	—	No.	—	No.	—
—	—	—	—	—	—	—	—	8,518	54	6,678	37
384	19	—	—	2,526	100	1,250	45	7,227	308	5,564	176
Cwts.	—	Cwts.	—	290	23	Cwts.	—	320	24	136	7
No.	—	No.	—	No.	—	No.	—	No.	—	No.	—
6,048	12	4,158	8	—	—	882	1	14,130	25	9,387	17
Cwts.	—	Cwts.	—	Cwts.	—	Cwts.	—	Cwts.	—	Cwts.	—
381	106	155	80	775	137	642	138	1,486	335	1,199	339
—	137	—	88	—	260	—	184	—	746	—	576
—	2,984	—	9,090	—	4,217	—	6,087	—	12,938	—	21,521

subject to correction in Annual Returns.

FISHERY STATISTICS—

STATEMENT of the Total QUANTITY and VALUE of the FISH returned compared with the

	North Coast.				East Coast.			
	1909.		1908.		1909.		1908.	
	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.
	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
Brill,	—	—	—	—	7	18	10	15
Soles,	2	11	4	20	72	276	35	120
Turbot,	—	—	—	—	20	84	23	86
Total Prime Fish,	2	11	4	20	99	378	68	221
Cod,	692	102	235	50	803	470	559	412
Conger Eel,	10	3	4	2	607	301	574	317
Haddock,	74	34	263	106	692	564	577	487
Hake,	—	—	—	—	544	470	472	392
Herrings,	86,158	19,730	33,410	21,320	2,225	832	4,423	1,421
Ling,	90	10	—	—	570	195	592	201
Mackerel,	528	66	793	98	—	—	—	—
Plaice,	263	291	285	320	465	441	1,559	1,628
Ray or Skate,	120	32	52	13	678	169	688	172
Sprats,	—	—	—	—	—	—	—	—
Whiting,	8	4	14	7	952	699	1,072	768
All other except Shell Fish,	455	60	352	85	651	347	684	371
Total,	88,400	20,343	35,412	22,027	8,286	4,866	11,268	6,450
SHELL FISH :—	No.		No.		No.		No.	
Crabs,	8,976	45	14,990	57	9,186	58	13,481	31
Lobsters,	4,668	138	3,374	113	3,153	137	6,646	275
	Cwts.		Cwts.		Cwts.		Cwts.	
Mussels,	—	—	—	—	100	3	167	7
	No.		No.		No.		No.	
Oysters,	—	—	—	—	—	—	—	—
	Cwts.		Cwts.		Cwts.		Cwts.	
Other Shell Fish,	164	24	116	17	133	47	151	56
Total,	—	207	—	187	—	245	—	369
Total value of Fish landed	—	20,550	—	22,214	—	5,111	—	6,819

NOTE.—The above figures are

IRELAND.

as landed on the IRISH COASTS during the month of May, 1909, as corresponding period in 1908.

South Coast.				West Coast.				Total.			
1909.		1908.		1909.		1908.		1909.		1908.	
Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.
Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
3	5	1	2	9	17	15	41	19	40	26	58
36	144	36	152	66	307	143	538	176	738	218	830
3	14	2	6	29	148	68	272	52	246	93	364
42	163	39	160	104	472	226	851	247	1,024	337	1,252
138	75	115	77	129	56	104	33	1,762	703	1,013	572
18	6	25	7	7	4	1	1	642	314	604	327
10	5	15	7	150	120	745	392	926	723	1,600	992
—	—	—	—	—	—	20	9	544	470	492	401
4,040	818	8,580	1,451	778	177	9,357	4,329	93,201	21,557	55,770	28,521
24	22	59	43	85	38	21	9	769	265	672	313
25,225	5,368	62,307	13,096	12,809	2,482	18,062	5,044	38,562	7,916	81,162	18,238
133	141	152	186	164	168	422	422	1,025	1,041	2,418	2,562
13	4	9	2	10	2	45	19	821	207	794	206
—	—	—	—	—	—	—	—	—	—	—	—
48	10	118	26	55	34	164	98	1,063	747	1,368	899
182	74	257	88	617	306	793	346	1,905	787	2,086	890
29,873	6,686	71,676	15,143	14,908	3,859	29,960	11,553	141,467	35,754	148,316	55,173
No. 528	5	No. 120	1	No. 656	3	No. —	—	No. 19,346	111	No. 28,591	89
2,594	106	1,437	54	5,906	200	3,787	121	16,321	581	15,244	563
Cwts.	—	Cwts.	—	Cwts.	10	Cwts.	—	Cwts.	110	Cwts.	167
No.	—	No.	—	No.	—	No.	—	No.	—	No.	—
—	—	312	3	—	—	216	1	—	—	528	4
Cwts.	—	Cwts.	—	Cwts.	—	Cwts.	—	Cwts.	—	Cwts.	—
144	17	210	21	590	104	694	134	1,031	192	1,171	228
—	128	—	79	—	308	—	256	—	888	—	891
—	6,814	—	15,222	—	4,167	—	11,809	—	36,642	—	56,064

subject to correction in Annual Returns.

FISHERY STATISTICS—

STATEMENT of the Total QUANTITY and VALUE of the FISH returned compared with the

	North Coast.				East Coast.			
	1909.		1908.		1909.		1908.	
	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.
	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
Brill,	—	—	—	—	9	23	15	23
Solos,	8	36	7	30	41	148	33	148
Turbot,	—	—	—	—	30	117	25	109
Total Prime Fish,	8	36	7	30	80	288	73	280
Cod,	388	43	28	12	1,002	688	672	414
Conger Eel,	2	1	—	—	841	304	525	243
Haddock,	18	8	107	40	726	569	730	664
Hake,	—	—	—	—	938	767	497	334
Herrings,	15,570	9,332	9,423	7,501	9,938	3,107	10,367	3,416
Ling,	59	5	—	—	904	278	514	187
Mackerel,	327	28	187	19	—	—	—	—
Plaice,	238	217	259	260	361	374	1,691	1,745
Ray or Skate,	74	19	—	—	972	236	658	163
Sprats,	—	—	—	—	—	—	—	—
Whiting,	10	5	10	4	1,437	864	1,085	732
All other except Shell Fish,	462	69	121	40	1,213	633	718	373
Total,	17,156	9,763	10,142	7,906	18,412	8,108	17,530	8,551
SHELL FISH :—	No.		No.		No.		No.	
Crabs,	16,732	66	20,695	63	22,886	91	31,822	70
Lobsters,	11,778	322	14,918	433	6,255	230	7,039	354
	Cwts.		Cwts.		Cwts.		Cwts.	
Mussels,	—	—	—	—	80	2	62	3
	No.		No.		No.		No.	
Oysters,	—	—	—	—	—	—	—	—
	Cwts.		Cwts.		Cwts.		Cwts.	
Other Shell Fish,	100	15	176	26	242	111	186	73
Total,	—	403	—	522	—	434	—	500
Total value of Fish landed,	—	10,166	—	8,428	—	8,542	—	9,051

NOTE.—The above figures are

IRELAND.

as landed on the IRISH COASTS during the month of June, 1909, as corresponding period in 1908.

South Coast.				West Coast.				Total.			
1909.		1908.		1909.		1908.		1909.		1908.	
Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£	Cwts.	£
8	18	1	2	16	29	19	34	33	70	35	59
37	163	43	188	100	403	133	439	186	750	216	805
3	13	2	7	32	130	65	242	65	260	92	358
48	194	46	197	148	562	217	715	284	1,080	343	1,222
397	221	427	138	105	32	160	41	1,892	984	1,287	605
104	39	79	34	14	4	5	2	961	348	609	279
20	12	35	28	327	178	357	196	1,091	767	1,229	928
71	15	25	22	30	15	60	22	1,039	797	582	378
4,781	1,083	5,413	1,558	45	18	686	340	30,334	13,540	25,889	12,815
294	147	62	55	19	9	17	11	1,276	439	593	253
35,700	6,004	61,082	10,304	31,485	5,682	46,896	10,387	67,512	11,714	108,165	20,710
154	180	166	237	304	285	547	449	1,057	1,056	2,663	2,691
13	2	41	9	24	4	16	3	1,083	261	715	175
84	16	—	—	—	—	—	—	84	16	—	—
140	30	66	15	106	36	232	105	1,693	935	1,393	856
388	195	280	108	782	373	1,317	535	2,845	1,270	2,436	1,056
42,194	8,138	67,722	12,705	33,389	7,198	50,510	12,806	111,151	33,207	145,904	41,968
No.		No.		No.		No.		No.		No.	
3,759	36	2,210	20	581	2	568	2	43,958	195	55,295	155
23,630	812	6,797	242	24,094	802	20,835	679	65,757	2,166	49,589	1,708
Cwts.	—	Cwts.	—	Cwts.	—	Cwts.	—	Cwts.	80	Cwts.	62
No.	—	No.	—	No.	—	No.	—	No.	—	No.	—
Cwts.	—	Cwts.	—	Cwts.	—	Cwts.	—	Cwts.	—	Cwts.	—
50	5	210	21	395	68	763	127	787	199	1,335	247
—	853	—	283	—	872	—	808	—	2,562	—	2,113
—	8,991	—	12,988	—	8,070	—	13,614	—	35,769	—	44,081

subject to correction in Annual Returns.

STATEMENT of the TOTAL QUANTITY of FISH landed on the ENGLISH and WELSH COASTS during the Month and Six Months ended 30th June, 1909, compared with the corresponding Periods of the Year 1908.

	June.		Six Months ended 30th June.	
	1909.	1908.	1909.	1908.
	QUANTITY.			
	Cwts.	Cwts.	Cwts.	Cwts.
Brill,	1,502	1,953	10,098	12,111
Soles,	6,487	6,066	32,459	32,393
Turbot,	5,493	6,849	30,138	32,030
Prime Fish not separately distinguished,	728	—	2,611	—
Total Prime Fish, ..	14,210	14,868	75,306	76,534
Bream,	6,081	6,727	40,451	37,741
Catfish,	7,667	9,510	39,609	39,572
Coalfish,	11,928	10,932	110,821	121,119
Cod,	172,102	148,261	1,172,876	1,213,415
Conger Eels,	3,469	3,641	22,390	21,869
Dabs,	9,752	9,209	55,795	49,845
Dogfish,	869	916	15,502	10,875
Dory,	117	187	682	894
Flounders or Flukes, ..	373	329	4,524	3,976
Gurnards,	8,294	10,534	51,582	56,887
Haddock,	168,526	194,003	1,069,174	1,168,749
Hake,	141,512	121,868	498,688	457,422
Halibut,	18,473	22,460	77,909	97,471
Latchetts (Tubs),	618	554	2,381	1,169
Lemon Soles,	5,820	4,631	23,230	22,419
Ling,	19,670	15,240	116,486	126,944
Megrims,	4,750	5,427	49,161	42,176
Monks (or Anglers), ..	2,347	2,556	17,125	14,969
Mullet (Red),	9	23	227	522
Plaice,	166,348	92,112	488,462	383,168
Pollock,	1,065	1,073	10,308	9,076
Skatos and Rays,	36,256	31,477	208,996	183,998
Torsk,	1,247	1,727	8,421	7,880
Whiting,	14,169	15,577	133,195	144,987
Witches,	1,640	2,059	26,343	20,717
Herrings,	97,138	79,798	148,173	153,844
Mackerel,	65,244	63,094	281,766	293,666
Mullet (Grey),	28	71	603	464
Pilchards,	115	19	227	19
Sprats,	—	—	32,785	17,493
Whitebait	847	676	4,012	3,801
Fish not separately distinguished,	25,521	30,352	173,174	209,830
Total,	1,006,205	899,911	4,960,384	4,993,511
Shell Fish :—	No.	No.	No.	No.
Crabs,	666,594	717,841	3,463,502	3,540,603
Lobsters,	96,512	81,001	276,225	283,906
Oysters,	519,495	393,225	9,209,605	14,214,337
	Cwts.	Cwts.	Cwts.	Cwts.
Other Shell Fish,	23,031	25,939	199,636	227,265

NOTE.—The figures for 1909 are subject to correction in the Annual Returns.

STATEMENT of the TOTAL VALUE of FISH landed on the ENGLISH and WELSH COASTS during the Month and Six Months ended 30th June, 1909, compared with the corresponding Periods of the Year 1908.

	June.		Six Months ended 30th June.	
	1909.	1908.	1909.	1908.
	VALUE.			
	£	£	£	£
Brill,	3,907	5,206	29,147	37,959
Soles,	32,395	37,444	210,139	220,790
Turbot,	17,741	20,283	124,274	116,320
Prime Fish not separately distinguished,	1,114	—	3,906	—
Total Prime Fish, ..	55,157	62,933	367,466	375,069
Bream,	963	1,272	9,655	9,603
Catfish,	1,966	3,523	12,210	17,693
Coalfish,	1,593	2,564	21,344	30,085
Cod,	51,933	78,466	509,059	684,237
Conger Eels,	2,263	2,199	17,073	15,751
Dabs,	4,363	5,306	36,734	36,730
Dogfish,	269	287	3,786	2,961
Dory,	93	161	612	1,005
Flounders or Flukes, ..	208	202	2,457	2,218
Gurnards,	1,527	2,011	13,104	15,880
Haddock,	78,707	98,498	615,729	745,319
Hake,	62,119	62,390	296,556	278,830
Halibut,	31,526	34,282	173,020	172,741
Latchets (Tubs),	311	282	1,548	766
Lemon Soles,	8,153	8,472	47,301	53,073
Ling,	5,863	7,074	42,845	62,123
Megrims,	2,688	3,501	33,714	32,679
Monks (or Anglers), ..	854	933	7,160	6,178
Mullet (Red),	51	76	565	1,282
Plaice,	79,554	77,690	429,644	440,273
Pollock,	429	481	4,586	4,591
Skates and Rays,	16,189	15,374	117,586	109,870
Torsk,	307	650	3,584	3,058
Whiting,	6,389	6,710	67,200	72,297
Witches,	1,426	2,311	26,995	24,261
Herrings,	26,754	17,326	41,189	33,494
Mackerel,	30,092	28,070	141,768	150,297
Mullet (Grey),	53	118	969	859
Pilchards,	49	16	85	16
Sprats,	—	—	4,271	3,093
Whitebait,	1,362	985	6,236	4,227
Fish not separately distinguished,	14,819	15,502	84,804	96,312
Total,	488,030	539,665	3,140,855	3,486,871
Shell Fish :—				
Crabs,	7,965	8,950	32,970	34,996
Lobsters,	4,572	3,874	13,565	12,940
Oysters,	855	686	30,569	43,206
Other Shell Fish,	8,574	9,425	52,604	55,180
Total,	21,966	22,935	129,708	146,322
Total value of all Fish, .	509,996	562,600	3,270,563	3,633,193

NOTE.—The figures for 1909 are subject to correction in the Annual Returns.

STATEMENT of the TOTAL QUANTITY and VALUE of the Fish returned as landed on the SCOTTISH COASTS during the Month and Six Months ended 30th June, 1909, compared with the corresponding periods for the Year 1908.

	June.		Six Months ended 30th June.	
	1909.	1908.	1909.	1908.
QUANTITY.				
	Cwts.	Cwts.	Cwts.	Cwts.
Herrings,	1,135,757	1,087,725	1,578,177	1,741,950
Sprats,	—	—	2,089	8,863
Sparlings,	—	—	56	84
Mackerel,	2,218	1,075	11,408	8,052
Cod,	88,340	76,220	540,721	500,428
Ling,	26,855	18,647	125,457	106,867
Torsk (Tusk),	1,592	2,362	11,065	9,597
Saith (Coal Fish),	15,592	13,324	111,325	82,765
Haddock,	75,918	100,685	510,915	568,066
Whiting,	8,801	11,828	59,092	77,025
Conger Eel,	875	544	21,037	32,962
Turbot,	539	537	3,080	12,689
Halibut,	7,561	6,298	26,574	26,810
Lemon Soles,	4,084	3,433	16,904	13,558
Flounders, Plaice, Brill,	5,173	4,513	32,595	31,999
Skate and Rays,	9,076	7,999	78,023	84,750
Fish not separately distinguished, except Shell Fish,	9,625	9,285	50,424	54,684
Total,	1,393,776	1,345,305	3,174,437	3,335,839
Shell Fish :—				
	No.	No.	No.	No.
Crabs,	374,335	325,167	1,795,388	1,935,137
Lobsters,	82,393	85,893	320,814	307,664
Oysters,	—	—	738,285	405,990
	Cwts.	Cwts.	Cwts.	Cwts.
Clams,	40	8	3,830	4,199
Mussels,	5,108	5,715	49,810	58,252
Other Shell Fish,	3,535	3,702	28,676	26,146
VALUE.				
	£.	£.	£.	£.
Herrings,	305,206	169,120	407,630	549,089
Sprats,	—	—	309	570
Sparlings,	—	—	154	137
Mackerel,	380	131	4,045	1,673
Cod,	24,812	24,502	186,579	188,388
Ling,	5,878	4,861	33,584	28,284
Torsk (Tusk),	278	423	2,453	1,387
Saith, (Coal Fish),	1,501	1,766	15,022	13,563
Haddock,	30,502	30,348	253,207	277,006
Whiting,	3,044	3,271	24,409	30,868
Conger Eel,	378	233	7,268	7,130
Turbot,	1,089	1,344	9,268	8,765
Halibut,	9,807	9,811	43,864	34,871
Lemon Soles,	5,923	6,062	32,012	30,077
Flounders, Plaice, Brill,	5,952	6,426	39,305	48,051
Skate and Rays,	1,597	1,292	18,700	18,073
Fish not separately distinguished except Shell Fish,	2,842	3,210	22,494	29,234
Total,	399,189	262,800	1,100,303	1,263,154
Shell Fish :—				
	£.	£.	£.	£.
Crabs,	2,308	2,355	10,826	8,598
Lobsters,	4,226	4,077	16,430	16,371
Oysters,	—	—	2,645	1,447
Clams,	6	—	582	607
Mussels,	242	290	2,284	3,266
Other Shell Fish,	1,198	1,072	7,361	6,808
Total,	7,980	7704	40,128	37,095
Total Value of Fish landed,	407,169	270,594	1,140,431	1,300,249

NOTE.—The above figures are subject to correction in the Annual Returns.

STATEMENT of the TOTAL QUANTITY and VALUE of the FISH returned as landed on the IRISH COASTS during the Month and Six Months ended 30th June, 1909, compared with the corresponding Periods of the Year 1908.

	June.		Six Months ended 30th June.	
	1909.	1908.	1909.	1908.
QUANTITY.				
	Cwts.	Cwts.	Cwts.	Cwts.
Brill,	33	35	227	263
Soles,	186	216	1,373	1,393
Turbot,	65	92	346	390
Total Prime Fish,	284	343	1,946	2,046
Cod,	1,892	1,287	19,767	13,103
Conger Eel,	961	609	5,418	3,680
Haddock,	1,091	1,229	10,033	12,489
Hake,	1,030	582	4,292	3,479
Herrings,	30,334	28,989	231,278	121,854
Ling,	1,276	593	6,665	7,612
Mackerel,	67,512	110,011	130,190	227,546
Plaice,	1,057	2,683	5,365	12,719
Ray or Skate,	1,083	715	6,262	5,515
Sprats,	84	—	788	—
Whiting,	1,693	5,093	7,841	11,482
Fish not separately distinguished, except Shell Fish,	2,845	2,436	10,506	9,934
Total,	111,151	154,550	440,357	431,359
Shell Fish :—				
	No.	No.	No.	No.
Crabs,	43,958	55,295	74,640	90,954
Lobsters,	65,757	53,689	96,122	79,507
Oysters,	—	—	145,450	84,289
Mussels,				
Other Shell Fish,	80	62	2,363	2,502
	787	1,335	8,164	7,769
VALUE.				
	£	£	£	£
Brill,	70	59	362	424
Soles,	750	742	5,715	6,095
Turbot,	260	402	1,518	1,411
Total Prime Fish,	1,080	1,203	7,595	7,930
Cod,	984	605	9,959	7,115
Conger Eel,	348	279	2,340	1,998
Haddock,	767	928	6,676	7,728
Hake,	797	378	3,523	2,770
Herrings,	13,540	13,542	62,618	54,065
Ling,	439	253	2,482	3,027
Mackerel,	11,714	19,983	28,862	52,879
Plaice,	1,050	2,691	5,637	13,435
Ray or Skate,	261	175	1,591	1,271
Sprats,	16	—	97	—
Whiting,	935	856	4,761	5,029
Fish not separately distinguished, except Shell Fish,	1,270	1,056	5,017	4,667
Total,	33,207	41,949	141,158	161,922
Shell Fish :—				
	£	£	£	£
Crabs,	1105	155	367	283
Lobsters,	2,166	1,845	3,316	2,780
Oysters,	—	—	208	1,146
Mussels,	2	3	167	107
Other Shell Fish,	199	247	2,070	1,761
Total,	2,562	2,250	6,128	5,077
Total Value of Fish landed,	35,769	44,199	147,286	166,999

NOTE.—The above figures are subject to correction in Annual Returns.

**AVERAGE PRICES of CROPS, LIVE STOCK, MEAT, PROVISIONS, &c., for the QUARTER
ended 30th JUNE, 1909.**

PRODUCT.	PROVINCE.				IRELAND.	
	Leinster.	Munster.	Ulster.	Con-naught.	1909.	1908.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
CROPS :—						
Wheat, per 112 lbs.	—	—	—	—	—	—
Oats (White) „	7 11	—	7 8½	7 5½	7 8½	6 10½
„ (Black) „	7 4	6 8½	—	—	7 2	5 11½
Barley „	—	—	—	—	—	—
Potatoes, „	3 2½	4 3	2 5½	3 6	3 2½	4 4½
Hay (Clover) „	5 1	3 10½	3 11	3 1½	4 3½	3 4½
„ (Meadow) „	3 11	2 4½	2 7½	2 6½	2 7½	2 0½
Grass Seed—						
(Perennial Rye) „	—	—	—	—	—	—
(Italian Rye) „	—	—	—	—	—	—
Flax, per 14 lbs.	—	—	—	—	—	—
LIVE STOCK :—						
Store Cattle :—	<i>£ s. d.</i>	<i>£ s. d.</i>	<i>£ s. d.</i>	<i>£ s. d.</i>	<i>£ s. d.</i>	<i>£ s. d.</i>
One year old, per head	6 19 10	7 9 8	6 2 5	7 4 3	6 16 10	6 19 5
Two years old, „	9 17 6	10 12 10	8 13 3	9 19 4	9 18 2	9 14 2
Three years old, „	14 9 2	14 5 2	—	12 9 1	13 2 11	13 3 8
Springers, „	15 8 1	15 10 11	13 5 1	14 17 1	14 11 6	13 13 2
Store Sheep :—						
Lambs, per head.	—	1 4 4	—	0 17 9	1 3 3	1 6 5
One year old						
and over „	1 14 2	1 16 2	—	1 12 11	1 14 0	1 19 9
Two years old						
and over „	—	0 19 0	—	1 9 0	1 7 7	1 15 0
Store Pigs (8 to 10 weeks old), „	1 6 0	1 3 6	1 6 4	1 6 8	1 5 8	1 1 6
Fat Cattle :—						
Bullocks, „	—	—	—	—	18 12 11	19 0 0
Heifers, „	—	—	—	—	16 5 10	16 12 0
Cows, „	—	—	—	—	15 9 5	16 9 8
Fat Sheep :—						
Wethers, „	—	—	—	—	2 8 16	2 19 9
Ewes, „	—	—	—	—	2 0 8	2 9 1
Hoggets, „	—	—	—	—	1 16 1	2 1 3
Lambs, „	—	—	—	—	1 7 1	1 11 0
MEAT, PROVISIONS, &c.	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Beef (Live) per 112 lbs.	—	—	—	—	34 9	34 10
„ (Dead), „	—	—	—	—	60 10	61 0
Mutton (Live), „	—	—	—	—	34 4	42 3
„ (Dead), „	—	—	—	—	60 1	73 11
Pork (Dead), „	50 3	56 7	55 6	50 4	56 3	46 9½
Butter (Creamery), „	100 1	99 7	—	—	99 7	103 9
„ (Factory) „	88 0	86 11	—	—	86 11	94 10
„ (Farmers), „	89 0	85 11	91 0	89 0	86 8	94 9
Eggs, „ per 120,	7 8½	7 0½	—	6 9	7 3½	6 10½
Wool, „ per lb.	0 9½	0 10½	—	0 9½	0 9½	0 6½

WEEKLY AVERAGE PRICE of WHEAT, OATS, and BARLEY, per 112 lbs., computed from Market Returns of certain quantities of these Cereals supplied by Inland Revenue Officers, during the QUARTER ended 30th JUNE, 1909.

Returns received in the Week ended	WHEAT.		OATS.		BARLEY.	
	Average Price per 112 lbs.	Quantity.	Average Price per 112 lbs.	Quantity.	Average Price per 112 lbs.	Quantity.
1909.	<i>s. d.</i>	Cwts. of 112 lbs.	<i>s. d.</i>	Cwts. of 112 lbs.	<i>s. d.</i>	Cwts. of 112 lbs.
April 3	—	—	6 6 $\frac{3}{4}$	4,311	—	—
" 10	—	—	6 8 $\frac{1}{2}$	3,418	—	—
" 17	—	—	7 0 $\frac{1}{2}$	4,029	—	—
" 24	—	—	7 5 $\frac{1}{2}$	4,427	—	—
May 1	—	—	7 5 $\frac{1}{2}$	3,590	—	—
" 8	—	—	7 6	2,956	—	—
" 15	—	—	7 6 $\frac{3}{4}$	4,077	—	—
" 22	—	—	7 8 $\frac{1}{4}$	3,361	—	—
" 29	—	—	7 8 $\frac{3}{4}$	2,708	—	—
June 5	—	—	8 0	3,207	—	—
" 12	—	—	8 0 $\frac{1}{2}$	3,446	—	—
" 19	—	—	8 1 $\frac{1}{2}$	3,247	—	—
" 26	—	—	8 4	3,648	—	—

AVERAGE PRICES of FAT CATTLE and FAT SHEEP, per 112 lbs., LIVE WEIGHT, sold in DUBLIN MARKETS during the QUARTER ended 30th JUNE, 1909, and also for the corresponding period during twelve preceding years.

Description	YEAR.													
	1909.	1908.	1907.	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.	
Fat Cattle,	<i>s. d.</i> 34 9	<i>s. d.</i> 34 10	<i>s. d.</i> 33 11	<i>s. d.</i> 32 5½	<i>s. d.</i> 32 8½	<i>s. d.</i> 34 3½	<i>s. d.</i> 34 5½	<i>s. d.</i> 37 4	<i>s. d.</i> 33 4	<i>s. d.</i> 34 11½	<i>s. d.</i> 33 7½	<i>s. d.</i> 30 6½	<i>s. d.</i> 33 3½	
Fat Sheep,	<i>s. d.</i> 34 4	<i>s. d.</i> 42 3	<i>s. d.</i> 42 8	<i>s. d.</i> 42 10	<i>s. d.</i> 39 9½	<i>s. d.</i> 40 6½	<i>s. d.</i> 40 3½	<i>s. d.</i> 37 0	<i>s. d.</i> 38 0	<i>s. d.</i> 40 1	<i>s. d.</i> 36 3½	<i>s. d.</i> 34 9	<i>s. d.</i> 37 10½	

NUMBER of ANIMALS included in Returns furnished under the MARKETS and FAIRS (Weighing of Cattle) ACT, 1891, Sections 3 and 4,
during the Quarter ended 30th JUNE, 1909.

WEEK ENDED	FAT CATTLE.				FAT SHEEP.			
	Dublin.		Belfast.		Dublin.		Belfast.	
	Corporation Market Authorities.	Mr. Gavin Low, Auctioneer.	Corporation Market Authorities.	Mr. John Robson, Auctioneer.	Corporation Market Authorities.	Mr. Gavin Low, Auctioneer.	Corporation Market Authorities.	Total Number of Sheep included in Returns
1909.								
April 1	66	163	89	40	—	217	—	217
" 8	46	98	174	16	10	200	—	210
" 15	45	104	134	28	—	294	—	294
" 22	64	135	125	36	—	360	—	278
" 29	64	106	121	12	13	215	—	228
May 6	64	69	120	13	—	297	—	297
" 13	57	53	120	19	—	412	—	412
" 20	66	67	117	41	—	389	—	389
" 27	58	59	114	39	8	562	—	570
June 3	91	77	123	40	—	327	—	327
" 10	64	67	122	34	38	408	—	446
" 17	93	92	133	34	—	376	—	376
" 24	106	147	136	44	—	254	—	254
Totals,	884	1,237	1,628	396	69	4,229	—	4,298

DISEASES OF ANIMALS IN IRELAND.

NUMBER OF OUTBREAKS of SWINE FEVER, and Number of SWINE returned as having been SLAUGHTERED in Ireland, under the Diseases of Animals Act of 1894, in the undermentioned period, by Order of the Department.

Quarter ended.	SWINE-FEVER.	
	Outbreaks confirmed.	Swine Slaughtered as Diseased or as having been Exposed to Infection.
30th June, 1909,	53	929

NUMBER of OUTBREAKS reported as having taken place, and NUMBER of ANIMALS returned as having been Attacked by ANTHRAX and GLANDERS in Ireland in the undermentioned period.

Quarter ended.	ANTHRAX.		GLANDERS (including Farcy).		Epizootic Lymphangitis.	
	Outbreaks Reported.	Animals Attacked.	Outbreaks Reported.	Animals Attacked.	Outbreaks Reported.	Animals Attacked.
30th June, 1909.	1	1	—	—	—	—

NUMBER of CASES of RABIES in DOGS in IRELAND during the undermentioned period.

Quarter ended.	Number of Cases.
30th June, 1909,	—

NUMBER of OUTBREAKS reported as having taken place, and NUMBER of ANIMALS returned as having been attacked by SHEEP-SCAB and PARASITIC-MANGE in Ireland in the undermentioned period.

Quarter ended.	SHEEP-SCAB.		PARASITIC-MANGE.	
	Outbreaks Reported.	Sheep Attacked.	Outbreaks Reported.	Animals Attacked.
30th June, 1909	63	1,454	20	34

Veterinary Branch,
Department of Agriculture and Technical Instruction
for Ireland, Dublin.

BUTTER PRICES DURING THE QUARTER

ABSTRACTED FROM "THE GROCER," "GROCER'S REVIEW,"

Excepting 1-lb. Rolls and Farmers' Butter all quotations are the
 an Irish Creamery would be 5s. to 7s. per cwt. less than
 freight, commission,

COUNTRY OF ORIGIN.	Type of Package.	Place of Sale.	WEEK ENDED.			
			APRIL.			
			3rd	10th	17th	24th
IRELAND— Creamery Butter,	Kiebs, kegs, or pyramid boxes,	London, ..	Per cwt. s. s.	Per cwt. s. s.	Per cwt. s. s.	Per cwt. s. s.
		Liverpool, ..	—	100-102	100-102	92-102
		Bristol, ..	—	—	—	92-101
		Cardiff, ..	108	100-102	102-104	102-104
		Manchester, ..	104-109	100-107	100-106	102-104
		Birmingham, ..	—	—	—	92-105
		Glasgow, ..	—	—	—	—
		Limerick, ..	—	—	—	—
		Cork, ..	—	—	—	—
		Belfast, ..	—	—	—	—
		Dublin, ..	110-112	102/8-105	102/8-105	92-102/8
		F. O. R., ..	109-121/4	106-121/4	108-119	107/4-119
		London, ..	—	90-92	88-94	88-94
		Liverpool, ..	94-98	92-98	92-96	88-94
		Bristol, ..	—	—	—	—
Factories, ..	1lb rolls, in boxes, Salted or unsalted	Cardiff, ..	98-102	96-98	94-97	96-98
		Manchester, ..	—	—	—	—
		Cork, ..	89-94	86-89	80-83	81-84
Farmers' Butter .	Firkins, 1st, Ex- port Price.	Cork, ..	80-85	77-83	70-74	72-76
	Do. 2nd „	Cork, ..	73-84	—	65	65-68
	Do. 3rd „	Cork, ..	80-95	74-87	72-89	72-92
	Fresh, ..	Cork, ..	—	—	—	—
FRANCE,	12 x 2lb. rolls,	London, ..	Per doz. lbs. 11-14/6	Per doz. lbs. 11-14/6	Per doz. lbs. 11-14/6	Per doz. lbs. 11-14/6
	Paris baskets, .	do., ..	Per cwt. 114-117	Per cwt. 114-117	Per cwt. 114-117	Per cwt. 114-117
DENMARK AND SWEDEN.	Kiebs, ..	Copenhagen Quotation,	92 Kr. 102/8 per = per 50 cwt. Kilos. —	92 Kr. 102/10 per = per 50 cwt. Kilos. —	90 Kr. 100/7 per = per 50 cwt. Kilos. —	90 Kr. 100/7 per = per 50 cwt. Kilos. —
		Average over- price.	—	—	—	—
		London, ..	108-110	108-110	106-108	106-108
		Liverpool, ..	114-118	110-113	109-112	108-111
		Bristol, ..	—	—	110	110
		Cardiff, ..	117-120	110-112	112-114	110-112
		Manchester, ..	110-114	108-111	108-110	105-109
		Birmingham, ..	110/6-118/6	108-112	117-112/6	106/6-111
		Newcastle-on- Tyne.	112-114	106-109	106-109	106-109
		Glasgow, ..	115-117	110-112	110-112	108-109
		Leith, ..	113-115	105-107	106/8-107/6	104-106
		Hull, ..	113-118	112-118	110-118	108-113
		F. O. R. London	112	112	109/8	109/8
		11b. rolls, 10 x 24 lbs. boxes.	—	—	—	—
FINLAND,	Kiebs, ..	Manchester, ..	109-112	104-106	105-108	104-105
		Liverpool, ..	110-112	105-107	105-107	103-105
		Hull, ..	110-115	108-112	108-112	104-108
		Cardiff, ..	115-116	109	108-110	108

ENDED 30th JUNE, 1909.

"GROCER'S GAZETTE," AND OTHER TRADE REPORTS.

Landed Prices of the Choicest Qualities. The Nett F.O.R. Price to the landed prices in Great Britain. This figure covers handling, &c.

WEEK ENDED.								
MAY.					JUNE.			
1st	8th	15th	22nd	29th	5th	12th	19th	26th
Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.
<i>s. s.</i>	<i>s. s.</i>	<i>s. s.</i>	<i>s. s.</i>	<i>s. s.</i>	<i>s. s.</i>	<i>s. s.</i>	<i>s. s.</i>	<i>s. s.</i>
98-102	102-104	-	108-113	104-110	100-104	100-106	102-106	102-106
99-101	102-105	103-106	106-110	108-112	102-107	101-104	104-106	102-105
100-102	102-106	106-108	110-112	110-112	104-110	103-108	104-110	104-109
102-104	104-105	107-108	110-112	109-111	106-108	105-106	105-108	106-108
98-105	100-106	101-106	108-113	109-114	100-111	100-108	104-110	104-110
-	-	-	108-110	109-112/6	104-109	102-105	104-106/6	104-107
-	-	-	-	110-111	103-104	100-102	103-104	103-104
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
98-102 8	102/8-105	102/8-107/4	107/4-109/8	107/4-112	104/8-107/4	100-104	100-104	100-104
108-116/8	107-116 8	110-114 4	112-120 4	110-115 8	106 4-115/8	109 4-115 8	106 4-115 8	106 4-115 8
88-94	88-94	88-97	94-100	94-100	92-99	90-100	94-102	94-101
86-90	86	88-94	90-94	92-98	90-94	90-95	95-98	94-98
-	94	-	102	102	-	100	-	-
98-100	98-100	96-100	98-102	98-102	98-102	92-98	93-100	98-102
-	-	-	-	-	-	-	-	-
81-84	81-82	82-90	88-90	86-90	83-85	83-88	88-89	86-90
72-76	72-77	79-84	84-87	85-88	81-84	82-87	85-86	85-87
63-64	60-65	68-75	77-79	78-81	79	79-80	80-82	80-82
74-91	73-93	75-97	81-98	85-97	81-91	81-94	87-96	84-96
Per doz. lbs.	Per doz. lbs.	Per doz. lbs.	Per doz. lbs.	Per doz. lbs.	Per doz. lbs.	Per doz. lbs.	Per doz. lbs.	Per doz. lbs.
10/6-13/6	10/6-13/6	10/6-13/6	10-13	10-13	10-13	9/6-12/6	9/6-12/6	10-13
Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.	Per cwt.
108-110	107-110	107-110	102-106	103-106	103-106	99-102	99-102	103-106
90	91	94	97	94	91	93	92	93
Kr. 100/7	Kr. 101/10	Kr. 105/1	Kr. 108/7	Kr. 105/3	Kr. 101/11	Kr. 104/4	Kr. 104/2	Kr. 104/3
per = per	per = per	per = per	per = per	per = per	per = per	per = per	per = per	per = per
50 cwt.	50 cwt.	50 cwt.	50 cwt.	50 cwt.	50 cwt.	50 cwt.	50 cwt.	50 cwt.
Kilos.	Kilos.	Kilos.	Kilos.	Kilos.	Kilos.	Kilos.	Kilos.	Kilos.
-	-	-	-	-	-	-	-	-
106-109	108-110	111-113	115-118	111-114	107-110	110-112	110-113	110-113
109-112	111-113	111-114	118-121	117-122	109-118	111-115	114-118	113-117
110	-	-	-	-	-	-	-	-
111-112	112-113	112-113	116-118	120-123	113-117	112-114	115-116	115-116
108-111	108-111	110-113	116-118	116-120	108-114	107-115	112-116	111-115
107-111	108-111	109-112	113-116	114/6-118	110-114/6	108-112	111-114	110-114
108-110	110-112	112-114	116-118	119-121	112-114	108-110	112-114	112-114
109-110	110-111	110-111	116-117	113-117	110-112	108-109	111-112	112-113
106-157	108-109	108-109	113/4-114/8	117-119	111-113	106-108	111 6-113/6	111 6-113/6
108-112	108-113	109-116	115-120	116-120	112-116	110-114	113-116	112-118
109/8	110/10	114/4	117/10	114/4	119/10	113/2	113/2	113/2
105-106	104-106	106-108	111-114	112-115	108-110	106-111	108-112	109-113
104-106	107-108	-	-	-	-	-	-	-
105-108	107-109	106-112	112-116	112-115	107-110	109-112	109-113	107-112
108-109	108-110	109-110	112-114	118	110-112	111-112	110-112	112

continued on pages 816-817.

BUTTER PRICES DURING THE QUARTER

ABSTRACTED FROM "THE GROCER," "GROCER'S REVIEW,"

Excepting 1-lb. Rolls and Farmers' Butter all quotations are the
an Irish Creamery would be 5s. to 7s. per cwt. less than
freight, commission,

COUNTRY OF ORIGIN.	Type of Package.	Place of Sale.	WEEK ENDED.			
			APRIL.			
			3rd	10th	17th	24th
RUSSIA AND SIBERIA,	Kieis, ..	London, ..	Per cwt. s. s. 96-102	Per cwt. s. s. 96-100	Per cwt. s. s. 96-100	Per cwt. s. s. 96-98
		Liverpool, ..	100-105	98-108	98-104	98-102
		Bristol, ..	102-104	102-104	102-104	102-104
		Cardiff, ..	102	98	98	98-102
		Manchester, ..	103-104	96-100	98-100	98-100
		Birmingham, ..	98-102	96-100	96-100	96-100
		Glasgow, ..	102-104	100-102	96-98	96-98
		Leith, ..	100-104	97-100	97-100	97-100
		Hull, ..	-	-	-	98-101
HOLLAND, ..	Boxes, ..	London, ..	100-102	98-100	100-102	102-104
	Rolls, ..	do., ..	Per doz. lbs. 12-12/6	Per doz. lbs. 12-12/6	Per doz. lbs. 11/6-12	Per doz. lbs. 11/6-12
	Boxes, ..	Glasgow, ..	Per cwt.	Per cwt.	Per cwt.	Per cwt.
		Fresh, ..	110-112	110-113	110-113	110-113
		Salt, ..	108-110	106-108	106-108	106-108
		Manchester, ..	-	-	-	-
ITALY, ..	Rolls, ..	Hull, ..	112-118	110-116	108-116	110-112
		London, ..	Per doz. lbs. 13/6-14/6	Per doz. lbs. 13/6-14/6	Per doz. lbs. 13/6-14/6	Per doz. lbs. 13/6-14/6
CANADA, ..	56lb. boxes,	London, ..	Per cwt.	Per cwt.	Per cwt.	Per cwt.
		Liverpool, ..	-	-	-	-
		Bristol, ..	100-104	100-104	100	100
		Cardiff, ..	-	-	-	-
		Birmingham, ..	-	-	-	-
		Manchester, ..	-	-	-	-
		Glasgow, ..	-	-	-	-
AUSTRALIA AND NEW ZEALAND,*	Boxes, ..	London, ..	A. 94-98	A. /s 96-98	A. /s 93-98	A. /s 94-98
		Liverpool, ..	Z. 97-100	u100-104	u 96-98	u 98-102
		Bristol, ..	A. 98-102	Z. 97-104	Z. 98-102	Z. 98-102
		Cardiff, ..	Z. 103-106	A. 97-100	A. 98-101	A. 97-100
		Manchester, ..	Z. 101-103	Z. 101-103	Z. 101-104	Z. 101-104
		Birmingham, ..	A. 98-104	A. 98-104	A. 98-104	A. 98-104
		Glasgow, ..	Z. 104-107	Z. 102-107	Z. 102-106	Z. 102-105
		Leith, ..	A. 102-104	A. 98-101	A. 100-102	A. 97-102
		Hull, ..	Z. 106-107	Z. 102-104	Z. 104-105	Z. 103-105
			A. 102-104	A. 98-100	A. 98-100	A. 96-101
			Z. 104-106	Z. 102	Z. 102	Z. 96-101
			A. 100-105	A. 99-100	A. 97-101	A. 96-100
			Z. 106-109	Z. 102-104	Z. 102-103/6	Z. 100/6-104
			A. 103-105	A. 102-104	A. 102-104	A. 102-104
			Z. 106-107	Z. 104-105	Z. 104-105	Z. 102-104
			A. -	Z. -	A. -	A. -
			Z. -	A. -	Z. -	Z. -
			A. 106-114	A. -	A. -	A. 100-106
			Z. -	Z. -	Z. -	Z. -
ARGENTINA, ..	Boxes, ..	London, ..	96-100	90-100	96-100	96-102
		Liverpool, ..	101-104	97-101	98-101	97-101
		Bristol, ..	102-108	100-104	102-106	102-106
		Cardiff, ..	105-106	102	102-104	102-104
		Manchester, ..	102-104	98-100	96-100	96-101
		Birmingham, ..	104-108	100-104	100-102/6	98-103
		Glasgow, ..	104-108	100-102	102-108	102-108
UNITED STATES,	Tubs & boxes,	London, ..	-	-	-	-
		Liverpool, ..	-	-	-	-
		Bristol, ..	94	94	-	92
		Cardiff, ..	-	-	-	-
		Manchester, ..	-	-	-	-

*A.—Australia.

Z.—New Zealand.

s.—salted.

u—unsalted.

[illegible]

TABLES SHOWING THE EXPORTS

TABLE

RETURN of the NUMBER of ANIMALS EXPORTED from IRELAND to GREAT
the PORTS of EMBARKATION

IRISH PORTS.	CATTLE.							SHEEP.			
	Fat.	Stores (fattening).	Milch Cows.	Springers.	Other Cattle.	Calves.	Total.	Fat.	Stores.	Lambs.	Total.
Ballina,	38	177	-	-	12	-	227	98	-	535	633
Belfast,	5,420	22,466	1,338	2,452	-	1,225	32,901	703	29	2,474	3,206
Coleraine,	43	712	-	-	12	-	767	133	-	9	142
Cork,	429	10,155	242	407	26	417	11,676	3,436	9,644	12,328	25,408
Drogheda,	1,476	50	181	8	-	-	1,715	4,828	-	16,516	21,344
Dublin,	14,241	23,622	5,541	1,007	109	1,351	45,871	33,466	-	70,402	103,868
Dundalk,	1,881	1,623	85	39	-	-	3,628	757	-	6,372	7,129
Dundrum,	-	65	-	2	-	-	67	-	-	-	-
Greenore,	328	2,002	337	665	-	-	3,332	996	-	2,753	3,749
Larne,	249	5,676	-	10	-	1,187	7,122	40	306	56	402
Limerick,	18	40	-	-	121	-	179	15	-	13	28
Londonderry,	5,678	11,795	158	767	144	5,442	23,984	957	1,357	2,326	4,640
Milford,	-	85	-	-	93	-	93	-	-	-	-
Mulroy,	-	37	-	1	-	-	38	-	-	-	-
Newry,	170	819	8	9	-	-	1,006	155	-	1,193	1,348
Portrush,	-	58	-	-	-	-	58	-	-	-	-
Rosslare,	-	-	-	-	-	-	-	-	-	-	-
Sligo,	26	136	-	1	41	18	222	519	-	532	1,051
Warrenpoint,	-	-	-	-	-	-	-	-	-	-	-
Waterford,	4,491	8,514	23	20	53	-	13,101	7,046	581	7,710	15,337
Westport,	8	10	4	2	8	-	32	1,942	-	1,384	3,326
Wexford,	277	40	-	-	-	-	317	4,516	-	1,396	5,912
Total,	34,773	88,082	7,917	5,391	533	9,640	146,336	59,607	11,917	125,999	197,523

TABLE

RETURN of the NUMBER of ANIMALS EXPORTED from IRELAND to GREAT
the PORTS of DEBARKATION

BRITISH PORTS.	CATTLE.							SHEEP.			
	Fat.	Stores (fattening).	Milch Cows.	Springers.	Other Cattle.	Calves.	Total.	Fat.	Stores.	Lambs.	Total.
Androssan,	581	1,928	586	892	-	146	4,133	11	-	66	77
Ayr,	980	12,421	290	526	-	1,060	15,277	45	190	244	488
Barrow,	312	3,497	13	116	-	-	3,938	-	-	109	109
Bristol,	565	3,046	80	171	1	38	3,901	613	9,833	1,003	11,449
Cardiff,	-	-	-	-	-	-	-	-	-	-	-
Fishguard,	3,386	8,986	154	223	-	263	13,012	5,168	392	9,211	14,771
Fleetwood,	5,053	2,212	322	549	-	4	8,140	201	890	1,510	2,610
Glasgow,	2,512	16,570	789	754	373	6,763	27,770	1,169	34	2,786	3,989
Greenock,	22	1,987	3	26	9	6	2,053	39	-	92	131
Heysham,	1,044	11,910	719	529	-	45	14,247	262	404	2,433	3,099
Holyhead,	3,098	9,525	858	729	53	39	14,302	10,463	-	18,467	28,930
Liverpool,	11,775	9,966	4,092	844	95	246	27,018	37,879	46	81,962	119,887
London,	-	-	-	-	-	-	-	-	-	-	-
Manchester,	4,232	-	2	-	1	-	4,235	3,720	-	8,971	11,791
Newhaven,	-	41	-	8	-	-	49	-	-	-	-
Portsmouth,	-	-	1	1	-	-	2	-	-	-	-
Plymouth,	24	48	8	13	-	22	115	37	-	-	37
Preston,	-	-	-	-	-	-	-	-	-	-	-
Silloth,	943	1,697	-	-	1	1	2,642	-	-	-	-
Southampton,	5	236	-	2	-	-	243	-	-	-	-
Stranraer,	241	3,938	-	6	-	1,007	5,192	-	110	45	155
Whitehaven,	-	65	-	2	-	-	67	-	-	-	-
Total,	34,773	88,082	7,917	5,391	533	9,640	146,336	59,607	11,917	125,999	197,523

AND IMPORTS OF ANIMALS.

I.

BRITAIN during the Three Months ended 30th JUNE, 1909, showing
in Ireland.

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	IRISH PORTS.
Fat.	Stores.	Total.		Stal- lions.	Mares.	Geld- ings.	Total.				
378	-	378	-	-	-	-	-	-	-	1,238	Ballina.
675	1,450	2,134	113	-	952	1,879	2,836	1	22	41,213	Belfast.
28	-	28	-	5	1	2	3	1	-	941	Coleraine.
2,937	92	3,029	6	1	106	190	297	-	208	40,624	Cork.
967	307	1,274	3	1	19	11	31	-	-	24,367	Drogheda.
24,063	108	24,171	15	32	1,389	1,140	2,561	-	23	176,509	Dublin.
1,077	1,257	2,334	1,171	-	132	120	252	-	234	14,748	Dundalk.
-	-	-	-	-	-	-	-	-	-	67	Dundrum.
245	63	308	1,006	-	1,558	951	2,509	1	32	10,937	Greencore.
31	2,888	2,919	2	5	51	143	199	-	-	10,644	Larne.
-	-	-	-	-	3	11	14	-	-	221	Limerick.
210	3	213	-	-	98	117	215	-	2	20,054	Londonderry.
46	-	46	-	-	-	-	-	-	-	139	Milford.
117	-	117	-	-	2	2	4	-	2	161	Mulroy.
95	-	95	-	-	4	9	13	-	-	2,462	Newry.
64	-	64	-	-	1	-	1	-	-	123	Portrush.
-	-	-	-	-	5	10	15	-	-	15	Rosslare.
5,600	-	5,609	-	-	3	4	7	-	-	6,889	Sligo.
-	-	-	-	-	-	-	-	-	-	-	Warrenpoint.
5,623	-	5,623	3	2	359	541	902	-	274	35,240	Waterford.
1,007	-	1,007	-	-	3	1	4	-	-	4,369	Westport.
405	-	405	-	-	-	-	-	-	1	6,635	Wexford.
43,577	6,177	49,754	2,319	46	4,686	5,131	9,863	3	798	406,596	Total.

II.

BRITAIN during the Three Months ended 30th JUNE, 1909, showing
in Great Britain.

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	BRITISH PORTS.
Fat.	Stores.	Total.		Stal- lions.	Mares.	Geld- ings.	Total.				
54	1,592	1,646	93	-	108	364	472	-	-	6,421	Ardrossan.
100	2,455	2,555	-	2	28	47	77	-	3	18,400	Ayr.
413	26	439	1	-	83	136	219	-	-	4,706	Barrow.
754	-	754	3	-	31	55	86	-	159	16,352	Bristol.
-	-	-	-	-	1	1	2	-	-	2	Cardiff.
5,207	-	5,207	2	1	386	610	997	-	236	34,225	Fishguard.
39	71	110	4	2	272	470	744	-	11	11,619	Fleetwood.
6,876	3	6,879	2	2	295	496	793	1	3	39,437	Glasgow.
50	-	50	-	-	9	10	19	-	-	2,253	Greenock.
3,143	-	3,143	7	1	240	437	678	-	8	21,182	Heysham.
12,317	104	12,421	1,011	29	2,456	1,657	4,142	1	55	60,862	Holyhead.
13,375	820	14,195	1,184	4	550	544	1,098	1	322	163,705	Liverpool.
-	-	-	6	-	5	8	13	-	1	20	London.
655	-	655	1	-	118	93	211	-	-	16,993	Manchester.
-	-	-	2	-	3	5	8	-	-	59	Newhaven.
-	-	-	-	-	-	-	-	-	-	2	Portsmouth.
-	-	-	-	-	2	2	4	-	-	156	Plymouth.
488	-	488	1	-	15	9	24	-	-	513	Preston.
-	-	-	-	-	10	12	28	-	-	2,670	Silloth.
106	-	106	-	-	18	33	51	-	-	400	Southampton.
-	1,106	1,106	2	5	50	142	197	-	-	6,652	Stranraer.
-	-	-	-	-	-	-	-	-	-	67	Whitehaven.
43,577	6,177	49,754	2,319	46	4,686	5,131	9,863	3	798	406,596	Total.

TABLE

RETURN of the NUMBER of ANIMALS IMPORTED into IRELAND from GREAT
the PORTS OF

IRISH PORTS.	CATTLE.							SHEEP.			
	Fat.	Stores (fattening).	Milch Cows.	Springers.	Other Cattle.	Calves.	Total.	Fat.	Stores.	Lambs.	Total.
Ballina, .	-	10	-	-	-	-	16	-	-	-	-
Belfast, .	-	29	9	11	-	5	54	1,078	534	2	1,614
Coleraine, .	-	-	-	-	-	-	-	40	-	2	42
Cork, .	-	5	1	-	-	1	7	4	-	6	10
Drogheda, .	-	-	-	-	-	-	-	-	-	-	-
Dublin, .	7	86	8	-	-	3	104	203	70	-	273
Dundalk, .	-	-	-	-	-	-	-	-	-	-	-
Dundrum, .	-	-	-	-	-	-	-	-	-	-	-
Greenore, .	-	-	-	-	-	-	-	-	-	-	-
Larne, .	4	10	7	2	-	40	63	140	1	-	141
Limerick, .	-	1	-	-	-	-	1	-	-	-	-
Londonderry, .	-	-	-	-	-	-	-	-	226	-	226
Milford, .	-	-	-	-	-	-	-	-	-	-	-
Mulroy, .	-	-	-	2	-	-	2	-	-	-	-
Newry, .	-	-	-	-	-	-	-	-	-	-	-
Portrush, .	-	-	-	-	-	-	-	-	-	-	-
Rosslare, .	-	-	-	-	-	-	-	-	-	-	-
Sligo, .	-	4	-	-	-	1	5	-	-	-	-
Warrenpoint, .	-	-	-	-	-	-	-	-	-	-	-
Waterford, .	2	3	6	-	-	3	14	-	-	-	-
Westport, .	-	-	-	-	-	-	-	-	-	-	-
Wexford, .	-	-	-	-	-	-	-	-	-	-	-
Total, .	13	154	31	15	-	53	266	1,465	831	10	2,306

TABLE

RETURN of the NUMBER of ANIMALS IMPORTED into IRELAND from GREAT
the PORTS OF EMBARKATION

BRITISH PORTS.	CATTLE.							SHEEP.			
	Fat.	Stores (fattening).	Milch Cows.	Springers.	Other Cattle.	Calves.	Total.	Fat.	Stores.	Lambs.	Total.
Ardrossan, .	-	13	2	-	-	4	19	780	32	-	812
Ayr, .	-	4	3	6	-	-	13	438	471	2	911
Barrow, .	-	-	-	-	-	-	-	-	-	-	-
Bristol, .	-	-	-	-	-	-	-	-	-	-	-
Cardiff, .	-	-	-	-	-	-	-	-	-	-	-
Fishguard, .	2	4	7	-	-	3	16	4	-	6	10
Fleetwood, .	-	4	-	1	-	-	5	-	-	-	-
Glasgow, .	-	30	-	2	-	2	34	212	327	2	541
Greenock, .	-	1	-	-	-	-	1	-	-	-	-
Heysham, .	-	5	3	4	-	-	12	-	-	-	-
Holyhead, .	7	50	7	-	-	3	67	-	-	-	-
Liverpool, .	-	20	2	-	-	1	23	-	-	-	-
London, .	-	-	-	-	-	-	-	-	-	-	-
Manchester, .	-	-	-	-	-	-	-	-	-	-	-
Portsmouth, .	-	-	-	-	-	-	-	-	-	-	-
Plymouth, .	-	5	-	-	-	-	5	-	-	-	-
Preston, .	-	-	-	-	-	-	-	-	-	-	-
Silloth, .	-	2	-	-	-	-	2	31	-	-	31
Southampton, .	-	7	-	-	-	-	7	-	-	-	-
Stranraer, .	4	9	7	2	-	40	62	-	1	-	1
Whitehaven, .	-	-	-	-	-	-	-	-	-	-	-
Total, .	13	154	31	15	-	53	266	1,465	831	10	2,306

III.

BRITAIN during the Three Months ended 30th JUNE, 1909, showing
DEBARKATION IN IRELAND.

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	IRISH PORTS.
Fat.	Stores.	Total.		Stal- lions.	Mares.	Geld- ings.	Total.				
-	-	-	-	11	56	56	123	-	-	16	Ballina.
-	-	-	1	-	-	-	-	-	1	1,793	Belfast.
-	-	-	-	5	65	48	118	-	-	42	Coleraine.
-	-	-	1	-	1	1	2	-	-	136	Cork.
-	4	4	1	63	283	212	558	-	-	940	Drogheda.
-	-	-	-	-	1	1	2	-	-	2	Dublin.
-	-	-	-	-	1	-	1	-	-	1	Dundalk.
-	-	-	-	6	55	13	74	-	-	74	Dundrum.
-	-	-	-	4	11	9	24	-	-	228	Greenore.
-	-	-	-	-	-	-	-	-	-	1	Larne.
-	-	-	-	-	9	8	17	-	-	243	Limerick.
-	-	-	-	-	-	-	-	-	-	-	Londonberry.
-	-	-	-	-	-	-	-	-	-	2	Millford.
-	-	-	-	-	-	-	-	-	-	-	Mulroy.
-	-	-	-	-	1	1	2	-	-	2	Newry.
-	-	-	-	-	5	7	12	-	-	12	Portrush.
-	-	-	-	-	1	-	1	-	-	6	Rosslare.
-	-	-	-	-	-	-	-	-	-	-	Sligo.
-	-	-	-	7	79	95	181	-	-	195	Warrenpoint.
-	-	-	-	1	1	2	3	-	-	3	Waterford.
-	-	-	-	1	1	-	2	-	-	2	Westport.
-	-	-	-	-	-	-	-	-	-	-	Wexford.
-	4	4	3	97	570	453	1,120	-	1	3,700	Total.

IV.

BRITAIN during the Three Months ended 30th JUNE, 1909, showing
in Great Britain.

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	BRITISH PORTS.
Fat.	Stores.	Total.		Stal- lions.	Mares.	Geld- ings.	Total.				
-	-	-	-	-	3	2	5	-	-	836	Ardrossan.
-	-	-	-	4	20	14	38	-	-	962	Ayr.
-	-	-	-	-	-	1	1	-	-	1	Barrow.
-	-	-	-	2	83	95	180	-	-	180	Bristol.
-	-	-	-	-	-	-	-	-	-	-	Cardiff.
-	-	-	-	9	58	54	121	-	-	147	Fishguard.
-	-	-	-	3	15	24	42	-	-	47	Fleetwood.
-	-	-	-	2	22	19	43	-	-	618	Glasgow.
-	-	-	-	2	6	3	11	-	-	12	Greenock.
-	2	2	1	2	7	10	19	-	1	32	Heysham.
-	2	2	1	64	313	196	573	-	-	643	Holyhead.
-	-	-	-	5	21	20	46	-	-	72	Liverpool.
-	-	-	-	-	-	-	-	-	-	-	London.
-	-	-	1	-	3	4	7	-	-	8	Manchester.
-	-	-	-	-	3	1	4	-	-	4	Portsmouth.
-	-	-	-	-	2	1	3	-	-	8	Plymouth.
-	-	-	-	-	-	-	-	-	-	-	Preston.
-	-	-	-	-	-	-	-	-	-	33	Silloth.
-	-	-	-	4	4	3	7	-	-	14	Southampton.
-	-	-	-	-	9	6	19	-	-	82	Stranraer.
-	-	-	-	-	1	-	1	-	-	1	Whitehaven.
-	4	4	3	97	570	453	1,120	-	1	3,700	Total.

RETURN of the NUMBER of ANIMALS EXPORTED from IRELAND to the
showing the PORTS of

IRISH PORTS.	CATTLE.					SHEEP.		
	Fat.	Stores.	Other Cattle.	Calves.	Total.	Sheep.	Lambs.	Total.
BELFAST, .	—	139	—	—	139	69	—	69
DUBLIN, .	—	6	—	—	6	24	147	171
TOTAL, .	—	145	—	—	145	93	147	240

RETURN of the NUMBER of ANIMALS EXPORTED from IRELAND to the
showing the PORTS of DEBARKATION

ISLE OF MAN PORT.	CATTLE.					SHEEP.		
	Fat.	Stores.	Other Cattle.	Calves.	Total.	Sheep.	Lambs.	Total.
DOUGLAS, .	—	145	—	—	145	93	147	240

RETURN of the NUMBER of ANIMALS IMPORTED into IRELAND from the
showing the PORTS of

IRISH PORTS.	CATTLE.					SHEEP.		
	Fat.	Stores.	Other Cattle.	Calves.	Total.	Sheep.	Lambs.	Total.
BELFAST, .	—	—	—	—	—	—	—	—
DUBLIN, .	—	—	—	—	—	—	—	—
TOTAL, .	—	—	—	—	—	—	—	—

RETURN of the NUMBER of ANIMALS IMPORTED into IRELAND from the
showing the PORTS of EMBARKATION

ISLE OF MAN PORT.	CATTLE.					SHEEP.		
	Fat.	Stores.	Other Cattle.	Calves.	Total.	Sheep.	Lambs.	Total.
DOUGLAS, .	—	—	—	—	—	—	—	—

ISLE OF MAN during the Three Months ended 30th JUNE, 1909,
EMBARKATION in IRELAND.

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	IRISH PORTS.
Fat.	Stores.	Total.		Stallions.	Mares.	Geldings.	Total.				
—	—	—	—	—	20	45	65	—	—	273	BELFAST. DUBLIN.
—	—	—	—	—	31	10	41	—	—	218	
—	—	—	—	—	51	55	106	—	—	491	TOTAL.

ISLE OF MAN during the Three Months ended 30th JUNE, 1909,
in the ISLE OF MAN.

SWINE.			Goats.	HORSES.				Mules or Jennets.	Asses:	Total Animals.	ISLE OF MAN PORT.
Fat.	Stores.	Total.		Stallions.	Mares.	Geldings.	Total.				
—	—	—	—	—	51	55	106	—	—	491	DOUGLAS.

ISLE OF MAN during the Three Months ended 30th JUNE, 1909,
DEBARKATION in IRELAND.

[illegible]

ISLE OF MAN during the Three Months ended 30th JUNE, 1909,
in the ISLE OF MAN.

[illegible]

COASTING AND

RETURN of the NUMBER of ANIMALS SHIPPED to and from Places in
the Places of Embarkation

IRISH PORTS.	CATTLE.					SHEEP.			SWINE.		
	Fat.	Stores.	Other Cattle.	Calves.	Total.	Sheep.	Lambs.	Total.	Fat.	Stores.	Total.
Cork to Aghada Pier, .	-	-	-	10	10	-	-	-	-	-	-
" to Belfast, .	-	1	-	-	1	-	-	-	-	-	-
" to Spike Island, .	-	-	-	-	-	-	-	-	-	-	-
" to Queenstown, .	-	-	-	-	-	3	-	3	4	-	4
" to Waterford, .	-	8	-	-	8	-	40	40	-	-	-
Total, . . .	-	9	-	10	19	3	40	43	4	-	4
Aghada Pier to Cork, .	-	-	-	-	-	33	33	71	205	-	205
Belfast " . . .	-	-	-	-	-	-	-	-	16	-	16
Spike Island " . . .	-	-	-	-	-	-	-	-	36	-	36
Queenstown " . . .	-	-	-	-	-	-	-	-	-	-	-
Waterford " . . .	-	-	-	-	-	-	-	-	-	-	-
Total, . . .	-	-	-	-	-	33	33	71	257	-	257
Waterford to Ballyhack, .	1	-	-	8	9	2	2	4	-	-	-
" to Belfast, . . .	-	65	-	141	206	16	3	19	-	3	3
" to Duncannon, . . .	-	-	-	-	-	-	-	-	-	-	-
Total, . . .	1	65	-	149	215	18	5	23	-	3	3
Ballyhack to Waterford, .	161	45	-	-	206	180	349	529	49	-	49
Limerick to Kilrush, . .	-	-	3	-	3	12	-	12	-	-	-
Duncannon to Waterford, .	105	-	-	1	106	145	31	176	239	-	239
Kilrush to Limerick, . .	-	76	-	-	76	19	-	19	895	-	895
Banagher, " . . .	-	-	-	-	-	-	-	-	140	-	140
Glin, " . . .	-	-	-	-	-	-	-	-	9	-	9
Portumna, " . . .	-	-	-	-	-	-	-	-	400	-	400
Tarbert, " . . .	-	-	-	-	-	-	-	-	-	-	-
Kilkee, " . . .	-	-	-	-	-	-	-	-	-	-	-
Total, . . .	-	76	-	-	76	19	-	19	1,444	-	1,444
Greencastle to Greenore, .	-	42	-	-	42	20	40	60	26	-	26
Greenore to Greencastle, .	-	-	-	-	-	-	-	-	-	-	-
Londonderry to Moville, .	1	-	1	2	4	-	4	4	-	-	-
Moville to Londonderry, .	13	137	-	-	150	18	8	26	-	-	-
Ballina to Sligo, . . .	-	10	-	-	10	-	-	-	-	-	-
Belmullet " . . .	-	14	2	-	16	-	-	-	69	-	69
Total, . . .	-	24	2	-	26	-	-	-	69	-	69
Mulroy to Milford, . . .	-	-	-	-	-	-	-	-	-	11	11
Leithbeg to Mulroy, . . .	-	4	-	13	17	-	-	-	-	3	3
Milford to Mulroy, . . .	-	20	-	-	20	-	-	-	-	-	-
Mulroy to Portrush, . . .	-	26	-	-	26	-	-	-	-	-	-
Londonderry to Mulroy, . .	-	-	-	-	-	-	-	-	-	-	-
Total, . . .	281	448	6	175	910	453	510	963	2,088	17	2,105

INLAND NAVIGATION.

Ireland during the Three Months ended 30th June, 1909, showing
and Debarkation.

Goats.	HORSES.				Mules or Jennets.	Asses.	Total Animals.	IRISH PORTS.
	Stallions.	Mares.	Geldings.	Total.				
-	-	-	-	-	-	-	10	Cork to Aghada Pier.
-	-	3	5	8	-	-	9	" to Belfast.
-	-	-	-	-	-	-	-	" to Spike Island.
-	-	-	-	-	-	1	8	" to Queenstown.
-	-	-	-	-	-	-	48	" to Waterford.
-	-	3	5	8	-	1	75	Total.
3	-	-	-	-	-	-	279	Aghada Pier to Cork
-	-	1	2	3	-	-	3	Belfast "
-	-	-	-	-	-	-	16	Spike Island "
-	-	-	-	-	-	-	36	Queenstown "
-	-	1	-	1	-	-	1	Waterford "
3	-	2	2	4	-	-	335	Total.
-	1	-	-	1	-	-	14	Waterford to Ballyhack.
-	-	-	-	-	-	-	-	" to Belfast.
-	1	3	-	4	-	1	233	" to Duncannon.
-	2	3	-	5	-	-	247	Total.
-	2	-	-	2	-	-	786	Ballyhack to Waterford.
-	-	-	-	-	-	-	15	Limerick to Kilrush.
-	-	-	-	-	-	-	521	Duncannon to Waterford.
-	-	3	-	3	-	-	993	Kilrush to Limerick.
-	-	-	-	-	-	-	140	Banagher "
-	-	-	-	-	-	-	9	Glin "
-	-	-	-	-	-	-	400	Portumna "
-	-	-	-	-	-	-	-	Tarbert "
-	-	-	-	-	-	-	-	Kilkee "
-	-	3	-	3	-	-	1,542	Total.
-	-	-	1	1	-	-	129	Greencastle to Greenore.
-	-	-	-	-	-	-	-	Greenore to Greencastle.
-	-	-	-	-	-	-	8	Londonderry to Moville.
-	-	-	-	-	-	-	176	Moville to Londonderry.
-	-	-	-	-	-	-	10	Ballina to Sligo.
-	-	-	1	1	-	-	86	Belmullet "
-	-	-	1	1	-	-	96	Total.
-	-	-	1	1	-	-	12	Mulroy to Milford.
-	-	-	-	-	-	-	20	Leithbeg to Mulroy.
-	-	-	-	-	-	1	21	Milford to Mulroy.
-	-	-	-	-	-	1	27	Mulroy to Portrush.
-	-	-	-	-	-	-	-	Londonderry to Mulroy.
3	4	11	10	25	-	4	4,010	Total.

RETURN of the NUMBER of HORSES EXPORTED from IRELAND through GREAT BRITAIN to the COLONIES and FOREIGN COUNTRIES during the THREE MONTHS ended 30th JUNE, 1909, showing the Ports of Embarkation in Ireland.

PORTS.	Number of Horses.			
	Stallions.	Mares.	Geldings.	Total.
Belfast,	—	95	64	159
Cork,	—	—	—	—
Dublin,	—	67	56	123
Dundalk,	—	—	—	—
Greenore,	—	688	343	1,031
Waterford,	—	91	94	185
Total,	—	941	557	1,498

RETURN of the NUMBER of HORSES IMPORTED into IRELAND through GREAT BRITAIN from the COLONIES and FOREIGN COUNTRIES during the THREE MONTHS ended 30th JUNE, 1909, showing the Ports of Debarkation in Ireland.

PORTS.	Number of Horses.			
	Stallions.	Mares.	Geldings.	Total.
Belfast,	2	9	3	14
Dublin,	—	—	5	5
Waterford,	—	—	—	—
Total,	2	9	8	19

RETURN of the NUMBER of HORSES IMPORTED into IRELAND direct from FOREIGN COUNTRIES during the THREE MONTHS ended 30th JUNE, 1909, showing the Ports of Debarkation in Ireland.

PORTS.	Number of Horses.			
	Stallions.	Mares.	Geldings.	Total.
Belfast,	—	—	—	—
Portrush,	—	—	—	—
Total,	—	—	—	—

EMIGRATION FROM IRELAND.

TABLE showing, by Destinations, the Numbers of Emigrants (Natives of Ireland) who left the Ports of Ireland during the months of April, May, and June, 1909, and the total for the Six Months ended the 30th June, 1909, together with the total Number of Emigrants in each of the corresponding periods of the year 1908.

DESTINATION.	April, 1909.	May, 1909.	June, 1909.	Six Months ended. 30th June, 1909.
FOREIGN COUNTRIES :—				
America (U.S.), . . .	5,602	3,650	1,550	12,915
Canada,	651	525	260	1,811
South Africa,	10	11	12	56
Australia,	51	62	57	413
New Zealand,	21	13	12	113
Other Countries, . . .	10	9	12	65
Total,	6,345	4,270	1,903	15,373
GREAT BRITAIN :—				
England and Wales, . .	177	218	169	990
Scotland,	36	84	49	444
Total,	213	302	218	1,434
General Total for 1909,	6,558	4,572	2,121	16,807
General Total for 1908,	4,163	4,228	1,664	13,511

The figures are subject to revision in the Annual Report.

The figures in the above Table have been extracted from the Returns published by the Registrar-General for Ireland.

ACCOUNT showing the QUANTITIES of certain kinds of AGRICULTURAL
into Ireland in each WEEK from

ARTICLES.	WEEK ENDED				
	3rd Apr.	10th Apr.	17th Apr.	24th Apr.	1st May.
ANIMALS LIVING—					
Horses, No.	-	-	-	-	-
FRESH MEAT—					
Beef (including refrigerated and frozen), . . . cwt.	3,700	-	-	-	-
Mutton, " " " "	1,600	-	-	-	-
Unenumerated, " " " "	48	-	-	-	-
SALTED OR PRESERVED MEAT—					
Bacon, cwt.	-	-	-	-	-
Beef, "	-	-	-	64	-
Hams, "	-	-	-	1	-
Pork, "	-	-	-	107	120
Meat, unenumerated, Salted or Fresh, . . . cwt.	-	-	-	-	-
Meat, preserved otherwise than by salting (including tinned and canned), . . cwt.	98	-	-	15	49
DAIRY PRODUCE AND SUBSTITUTES—					
Butter, cwt.	5	-	-	18	-
Margarine, . . . "	101	91	81	106	73
Cheese, "	-	-	7	5	-
Milk, Condensed, . . "	96	37	103	22	46
" Cream, . . . "	-	-	-	-	-
" Preserved, other kinds "	-	-	-	-	-
Eggs, gt. hunds.	-	-	-	-	-
LARD, cwt.	394	-	12	-	315
CORN, GRAIN, MEAL AND FLOUR—					
Wheat, cwt.	323,900	114,300	147,100	55,100	28,700
Wheat, Meal and Flour, "	30,300	2,000	3,300	3,800	14,600
Barley, "	4,800	-	56,000	-	-
Oats, "	12,600	34,800	300	11,600	-
Peas, "	380	120	20	-	30
Beans, "	-	-	-	-	-
Maize or Indian Corn, "	199,100	147,400	103,400	51,000	320,500
FRUIT, RAW—					
Apples, cwt.	-	-	-	-	-
Currants, "	-	-	-	-	-
Gooseberries, . . . "	-	-	-	-	-
Pears, "	-	-	-	-	-
Plums, "	-	-	-	-	-
Grapes, "	-	-	-	-	-
Lemons, "	-	-	-	-	-
Oranges, "	-	-	-	-	-
Strawberries, . . . "	-	-	-	-	-
Unenumerated, . . . "	-	-	-	-	-
HAY, tons	-	-	-	29	50
STRAW, "	-	-	-	-	-
MOSS LITTER, . . . "	-	82	10	163	127
HOPS, cwt.	-	-	-	-	-
VEGETABLES, RAW—					
Onions, bushels.	-	-	-	-	-
Potatoes, cwt.	-	-	50	90	-
Tomatoes, "	-	-	-	-	-
Unenumerated, . . . £	3	-	7	-	-
VEGETABLES DRIED,					
Preserved by Canning, "	-	-	-	-	-
POULTRY AND GAME, . . £	-	-	-	-	-

* This Table is confined to the Imports of certain kinds of Agricultural Produce into a request from this Department kindly consented to separate the Irish Imports (direct) form of Weekly Returns.

PRODUCE Imported direct (i.e. from the Colonies or Foreign Countries),
3rd April, 1909, to 26th June, 1909.*

WEEK ENDED.							
8th May.	15th May.	22nd May.	29th May.	5th Jun.	12th Jun.	19th Jun.	26th Jun.
-	-	-	-	-	-	-	-
-	-	-	3,750	-	-	-	-
-	-	-	1,750	-	-	-	-
-	-	-	40	-	-	-	-
418	-	-	-	-	-	-	-
-	-	-	-	48	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	565	-	-
77	58	38	63	103	68	94	85
50	122	6	6	89	8	46	6
-	-	76	84	-	36	-	64
-	-	-	-	-	-	-	-
-	-	-	-	60	3,600	4,860	-
12	-	3,125	-	-	6	6	147
203,500	14,500	92,100	262,400	167,800	-	145,200	300,700
14,300	4,200	14,400	8,500	2,900	2,600	1,200	18,500
-	-	16,600	12,500	11,400	25,400	60,000	-
100	-	60	90	70	130	4,400	-
29,100	224,300	131,200	328,400	-	654,500	464,300	29,300
-	-	-	-	-	-	-	-
-	-	-	-	-	40	50	46
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	21	80	56	-	-	-
-	-	-	-	-	-	-	-
50	40	41	40	61	81	44	64
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	400	-	-	-	-	-
-	8	-	-	-	-	16	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Ireland from the Colonies and Foreign Countries. The Board of Customs have in answer from those of the United Kingdom, and to supply this Department with them in the

Statistics and Intelligence Branch,
Department of Agriculture
and Technical Instruction for Ireland.

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